SEQUENCE OF OPERATION MATRIX

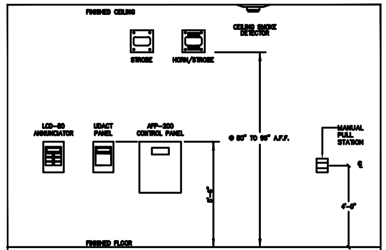
	MANUAL PULL STATION	SMOKE DETECTOR	THERMAL DETECTOR	SPRINKLER WATERFLOW SWITCH	SPRINKLER TAMPER VALVE	UDACT PHONE LINES	ALL CIRCUITS	PRIMARY POWER FAILURE	SECONDARY POWER FAILURE
ANNUNCIATE AT FIRE CONTROL ROOM	YES	YES	YES	YES	YES	YES	YES	YES	YES
ANNUNCIATE AT 24-HOUR ATTENDED REMOTE LOCATION A = ALARM T = TROUBLE S = SUPERVISORY	YES / A	YES / A	YES / S	YES / A	YES / S	YES / S	YES / S	YES / T	YES / T
ACTIVATE ALARM STROBES & HORN/STROBES	YES	YES	NO	YES	NO	NO	NO	NO	NO
ANNUNCIATE AT GRAPHIC PANEL	YES	YES	YES	YES	YES	NO	NO	NO	NO

NOTIFIER MODEL AFP-200 FIRE ALARM PANEL: FACP
STANDBY BATTERY CALCULATIONS
24 HOURS STANDBY + 10 MINUTES ALARM

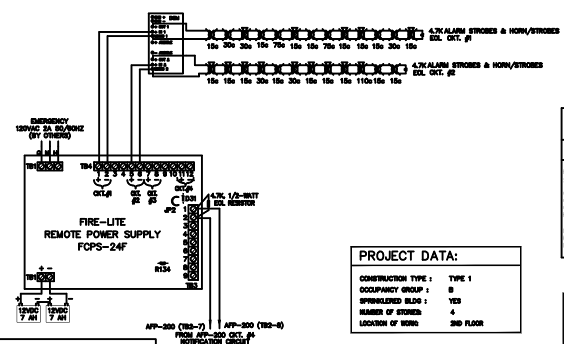
QTY	DESCRIPTION	SUPERVISORY CURRENT (ea.)	ALARM CURRENT (ea.)	DEVICES IN SUPERVISORY	SUPERV. CURRENT (total)	DEVICES IN ALARM	ALARM CURRENT (total)
1	AFP-200 ANALOG FIRE CONTROL PANEL	0.1000A	0.0150A	1	0.1000A	1	0.1500A
16	MMX-101 ADDRESSABLE MONITOR MODULE	0.0003	0.0004	16	0.0048	16	0.0064
1	UDACT	0.0400	0.1000	1	0.0400	1	0.1000
16	CPX-751 ION SMOKE DETECTOR	0.0002	0.0002	16	0.0032	15	0.0032
4	FDX-551 THERMAL DETECTOR	0.0002	0.0002	4	0.0008	4	0.0008
1	LCD-80	0.1000	0.1000	1	0.1000	1	0.1000
12	BGX-101L MANUAL PULL STATION	0.0003	0.0004	12	0.0036	12	0.0048
2	MMX-1 MONITOR MODULE	0.0003	0.0004	2	0.0006	2	0.0008
9	CMX-2 CONTROL MODULE	0.0004	0.0055	9	0.0036	9	0.0495
3	FCPS-24	–	0.4800	3	–	3	1.4400
1	DSM SYNC MODULE	–	0.0380	1	–	1	0.0380
8	15 CANDELA STROBE	–	0.0500	8	–	8	0.4000
3	75 CANDELA STROBE	–	0.1330	3	–	3	0.3990
3	110 CANDELA STROBE	–	0.1610	3	–	3	0.4830
5	15 CANDELA HORN/STROBE	–	0.0870	5	–	5	0.4350 A
5	75 CANDELA HORN/STROBE	–	0.1770	5	–	5	0.8850
11	110 CANDELA HORN/STROBE	–	0.2020	11	–	11	2.2220
4	SDX-551 PHOTO SMOKE DETECTOR, FOR DUCT	0.0002	0.0002	4	0.0008	15	0.0008
4	DHX-501 DUCT DETECTOR HOUSING	0.0260	0.0067	4	0.1040	4	0.2480
3	NEW 15 CANDELA STROBE	–	0.0510	3	–	3	0.153
1	NEW 30 CANDELA STROBE	–	0.0810	1	–	1	.081
1	NEW 75 CANDELA STROBE	–	0.1330	1	–	1	.133
4	NEW 15 CANDELA HORN/STROBE	–	0.087	4	–	4	.348
1	NEW 30 CANDELA HORN/STROBE	–	0.120	1	–	1	.102
1	NEW 110 CANDELA HORN/STROBE	–	0.2020	1	–	1	.202
			TOTAL SUPERV. CURRENT		0.3614A	TOTAL ALARM CURRENT	7.9953
			STANDBY HOURS		24	ALARM HOURS	0.1670
			TOTAL STANDBY AMPHRS		8.6736	TOTAL ALARM AMPHRS	1.334
			TOTAL AMPHRS REQUIRED		10.0076		
			TOTAL AMPHRS SUPPLIED		12.00		

WIRE DETAILS:
#14 AWG = TYPE THHN SIGNAL WIRE .109 O.D. 7 STRANDS (COPPER)
#16 AWG = TYPE TFN SIGNAL WIRE .093 O.D. 7 STRANDS (COPPER)
#18 AWG = TYPE TFN SIGNAL WIRE .078 O.D. 7 STRANDS (COPPER)
2c#18shp = SIGNAL CABLE SHIELDED, TWISTED PAIR .1675 O.D. 7 STRANDS (COPPER)

CABLE TO BE USED ON SYSTEM SHALL BE BSCC POWER LIMITED FIRE PROTECTION SIGNAL CABLE STATE FIRE MARSHAL #7161-1281:100



EQUIPMENT ELEVATION DETAIL



GENERAL NOTES

1 – A DEDICATED 120 VAC CIRCUIT, MIN. 15 AMPS TO BE PROVIDED AT FIRE CONTROL PANEL WITH LOCKOUT TO BE INSTALLED ON CIRCUIT BREAKER. (BY OTHERS)

2 – ALL WIRING, INITIATING DEVICES AND ANNUNCIATOR PANEL SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION (FIRE ALARM PANEL TO SUPERVISE THE ANNUNCIATOR PANEL, ALL CIRCUITS AND INITIATING DEVICES).

3 – WIRING SHALL NOT BE LOOPED THROUGH DEVICES – WIRE MUST BE CUT FOR IN AND OUT.

4 – POINT AND COMMON ANNUNCIATION AND T-TAPPING ARE PROHIBITED.

5 – ALL DEVICES IN THE ALARM SYSTEM SHALL BE COMPATIBLE AND INSTALLED TO MANUFACTURERS SPECIFICATIONS

6 – AUDIBILITY OF ALARM AND VOICE COMMUNICATION SHALL BE NOT LESS THAN 15 db ABOVE AMBIENT SOUND THROUGHOUT AREA OF ALARM

7 – A ONE PERSON PRIVATE OFFICE LESS THAN 400 SQUARE FEET GROSS AREA SHALL NOT BE CONSIDERED AS AN AREA FOR COMMON USE.

8 – CONDUIT FILL IS IN ACCORDANCE WITH TABLE 1 (PERCENT OF CROSS SECTION OF CONDUIT AND TUBING FOR CONDUCTORS) AND TABLE 4 (DIMENSION AND PERCENT OF AREA OF CONDUIT AND OF TUBING) OF NFPA 70, CHAPTER 9.

9 – CALPROTECTION SHALL PROVIDE DOCUMENTATION OF THE REQUIRED NFPA 72 CERTIFICATION PAPER UPON FINAL INSTALLATION. DOCUMENTATION SHALL BE SUBMITTED AT TIME OF FINAL INSPECTION TO THE CITY OF OAKLAND FIRE DEPARTMENT.

10 – CENTRAL MONITORING COMPANY:
CALPROTECTION
6735-B SIERRA CT.
DUBLIN, CALIFORNIA 94568-2611
U.L. FILE-VOL. NO.: S3389-2

11 – THE AREA SMOKE DETECTORS SHALL NOT BE LOCATED WITHIN 3 FEET OF HVAC SUPPLY AIR DIFFUSERS.

INSTALLATION DEPT. NOTES

COLOR CODING FOR CONTROL WIRING	JUNCTION BOX LOCATIONS AND / OR ELEVATIONS	DEVICE JUNCTION BOX TYPES DO NOT GANG DEVICES
FIRST ALARM SIGNALS #16 RED (+) BLACK (–) CIRCUIT 'A' DETECTION GRAY JACKET 18/2 SHIELD CLEAR (+COMMON ON BASE) BLACK (–SPLITS ON BASE) MANUAL RELEASE STATIONS BLUE JACKET 18/2 SHIELD NON-POLARIZED DEVICE	MANUAL RELEASE STATIONS 4' O/C ABOVE FIN. FLOOR FIRE ALARM CONTROL PANELS; ADJACENT EXTENDER PANELS AND GRAPHIC ANNUNCIATORS 5 1/2' TO TOP OF BACKBOX	CEILING SMOKE DET. 4/S BOX W/ 3/0 PLAST. RING OR 4/0 BOX ALL ALLEN BRADLEY DEV.-2 GANG, MANUAL RELEASE STATIONS- 1 GANG

PROJECT DATA:

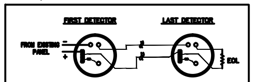
CONSTRUCTION TYPE : TYPE 1
OCCUPANCY GROUP : B
SPRINKLERED BLDG : YES
NUMBER OF STORIES: 4
LOCATION OF WORK: 2ND FLOOR

SCOPE OF WORK:

1. FURNISH AND INSTALL THREE (3) NEW WHEELOCK ADA STROBE LIGHTS.
2. FURNISH AND INSTALL SIX (6) NEW WHEELOCK ADA HORN/STROBE LIGHTS.
3. FURNISH NECESSARY LABOR AND MATERIAL TO RELOCATE TWO (2) EX. STROBES.
4. FURNISH NECESSARY LABOR AND MATERIALS TO RELOCATE FIVE (5) EX. HORN/STROBES.

ALL FIRE/LIFE SAFETY DEVICES TO BE INSTALLED PER CBC 1998 EDITION NFPA 72 1999 EDITION.

5. TESTING TYPE: FUNCTIONAL TEST



TYPICAL SMOKE DETECTOR WIRING DIAGRAM

STANDBY BATTERY CALCULATIONS: FCPS-24 – RSP1 : SECOND FLOOR

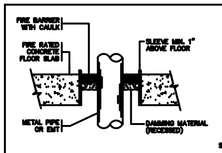
(24 HOURS STANDBY + 15 MINUTES ALARM)

DEVICE	SUPERVISORY CURRENT	ALARM CURRENT
1 EX. FCPS-24 REMOTE SIGNAL PANEL	.048 AMPS	.048 AMPS
1 EX. DSM DUAL SYNC MODULE @ .038 AMPS	----	.038
4 EX. 15 CANDELA STROBES @ .050 AMPS	----	.255
1 EX. 30 CANDELA STROBES @ .081 AMPS	----	.081
1 EX. 75 CANDELA STROBES @ .133 AMPS	----	.133
6 EX. 15 CANDELA HORN/STROBES @ .087 AMPS	----	.522
2 EX. 30 CANDELA HORN/STROBES @ .120 AMPS	----	.240
3 NEW 15 CANDELA STROBES @ .051 AMPS	----	.153
1 NEW 30 CANDELA STROBES @ .081 AMPS	----	.081
1 NEW 75 CANDELA STROBES @ .133 AMPS	----	.133
4 NEW 15 CANDELA HORN/STROBES @ .087AMPS	----	.348
1 NEW 30 CANDELA HORN/STROBES @ .120AMPS	----	.120
1 NEW 110 CANDELA HORN/STROBES @ .202	----	.202
TOTAL	.0480 AMPS	2.308 AMPS
x	24 HRS	.25 HRS
	1.152 AMPHRS	.5765 AMPHRS

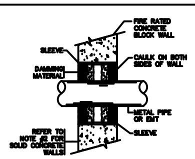
1.1520 AMPHOURS (STANDBY) + .5765 AMPHOURS (ALARM) = 1.7285 AMPHOURS

1.7285 AMPHOURS x 1.2 (DERATING FACTOR) = 2.07 AMPHOURS

BATTERIES SUPPLIED WITH SYSTEM ARE RATED AT 7.0 AMPHOURS



CONCRETE FLOOR SECTION VIEW



CONCRETE WALL SECTION VIEW

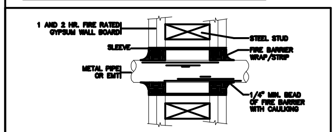
NOTES:

1. THE MAXIMUM ANNULAR SPACE TO BE FILLED IS 2" THE MINIMUM ANNULAR SPACE IS 3/4" THE MAXIMUM PIPE SIZE IS A NOMINAL 4" DIAMETER.
2. FOR SOLID CONCRETE WALLS, THE CAULK MAY BE CENTERED IN THE WALL WITH DAMMING MATERIAL ON BOTH SIDES OF THE CAULK.
3. PENETRATIONS SHALL BE CAULKED ON BOTH SIDES. SELF LEVELING CAULK SHALL BE USED ON ALL HORIZONTAL SURFACES.
4. THE DEPTH OF THE CAULK SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE:

CAULK DEPTH (MIN.)	INSULATION
1"	1" THICK
2"	2" THICK

5. INSTALLATION MUST CONFORM WITH PRODUCT MANUFACTURERS PERFORMANCE RATINGS PER ASTM E-814 (UL 1479) FIRE TEST AND UL RESPECTIVE CLASSIFICATION FOR FIRE STOPPING.

PENETRATION FIRESTOP FOR INSULATED METAL PIPE THROUGH A CONCRETE FLOOR OR WALL



PLAN VIEW

NOTE:

1. THE SPACE BETWEEN THE PENETRATING ITEM AND WALL BOARD MUST ACCOMODATE AT LEAST ONE WRAP OF 1/4" FIRE BARRIER WRAP/STRIP.
2. IF THE ANNULAR SPACE IS LESS THAN 1/2". ONE WRAP OF WRAP/STRIP IS REQUIRED.IF THE ANNULAR SPACE IS 1/2" OR GREATER, FILL WITH ADDITIONAL WRAPS OF WRAP/STRIP UNTIL THE SPACE IS LESS THAN 1/4".WRAP/STRIP MAY BE FRICTION FIT INTO OPENING SECURED WITH FOIL TAPE OR 16 GAUGE STEEL TIE WIRE.
3. SLIDE THE WALL STRIPS INTO THE OPENING, LEAVING A MAXIMUM OF 3/4" EXPOSED WRAP BEYOND THE WALL SURFACE.
4. SEAL THE WRAP/STRIP EDGES AND SEAMS WITH 1/4" MINIMUM BEAD OF FIRE BARRIER CAULK.
5. INSTALL FIRESTOP ON BOTH SIDES OF THE WALL.
6. INSTALLATION MUST CONFORMWITH PRODUCT MANUFACTURES PERFORMANCE RATINGS PER ASTM E-814 (UL 1479) FIRE TEST AND UL RESPECTIVE CLASSIFICATION FOR FIRE STOPPING.

PENETRATION FIRESTOP FOR INSULATED METAL PIPE THROUGH GYPSUM WALL BOARD

G:\DWG\2000\AL-00224\MAP.gif

VICINITY MAP N.T.S.

ITEM #	LEG. SYM.	NEW QTY.	I.H. QTY.	EX. QTY	CO/# QTY	CO/# QTY	CO/# QTY	MANUFACT. PART NO.	C.S.S.I. PART NO.	ITEM DESCRIPTION	CSFM LISTING #
	110	0	0	1	0	0	0	AS-24110W-FR	AVC31-110	WHEELOCK AS SERIES STROBE, 110 CANDELA, WALL MOUNT, RED	7125-0785:131
	30	0	0	1	0	0	0	AS-2430W-FR	AVC31-30	WHEELOCK AS SERIES STROBE, 30 CANDELA, WALL MOUNT, RED	7125-0785:131
	15	0	0	4	0	0	0	AS-2415W-FR	AVC31-15	WHEELOCK AS SERIES STROBE, 15 CANDELA, WALL MOUNT, RED	7125-0785:131
	75	0	0	1	0	0	0	RSS-2475W-FR	STR31-75	WHEELOCK RSS SERIES STROBE, 24VDC, 75 CANDELA, WALL MOUNT, RED	7125-0785:141
	30	0	0	1	0	0	0	RSS-2430W-FR	STR31-30	WHEELOCK RSS SERIES STROBE, 24VDC, 30 CANDELA, WALL MOUNT, RED	7125-0785:141
	15	0	0	3	0	0	0	RSS-2415W-FR	STR31-15	WHEELOCK RSS SERIES STROBE, 24VDC, 15 CANDELA, WALL MOUNT, RED	7125-0785:141

BILL OF MATERIALS

G:\Eng\AutoCAD\Support Files\GREY.tif

2005 MIRA MAR AVENUE
LONG BEACH, CA. 90815
F 562 494 3567
T 562 498 6444

TYPE OF SYSTEM
FIRE ALARM – TENANT IMPROVEMENT

CLIENT
SASCO ELECTRIC
1630 MEMOREX DRIVE
SANTA CLARA, CA 95050-2842

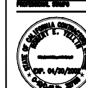
NO.	ISSUE DATE	DESCRIPTION	BY
1	10/11/2000	FOR SUBMITTAL	CM
2	12-1-00	AS-BUILT	AA

AS BUILT BY
ELECTRICAL ISSUE DATE BY
MECHANICAL ISSUE DATE BY
CHECK-OUT TECHNICIAN ISSUE DATE BY

PROJECT NAME
LAWRENCE BERKLEY NATIONAL LABORATORY.
415 20TH STREET
OAKLAND, CA 94612

SHEET DESCRIPTION TITLE SHEET

PROFESSIONAL STAMPS



PROJECT NUMBER AL-00541
FILE NAME AL-0054101.DWG
APPROVED BY BY
CHECKED BY HMG
DRAWN BY CM
SCALE N/A
DRAWING NUMBER
6380

SHEET NUMBER
FP 1.0
FILE: 00012448
4N943E066
PROJ. NO. FH0113