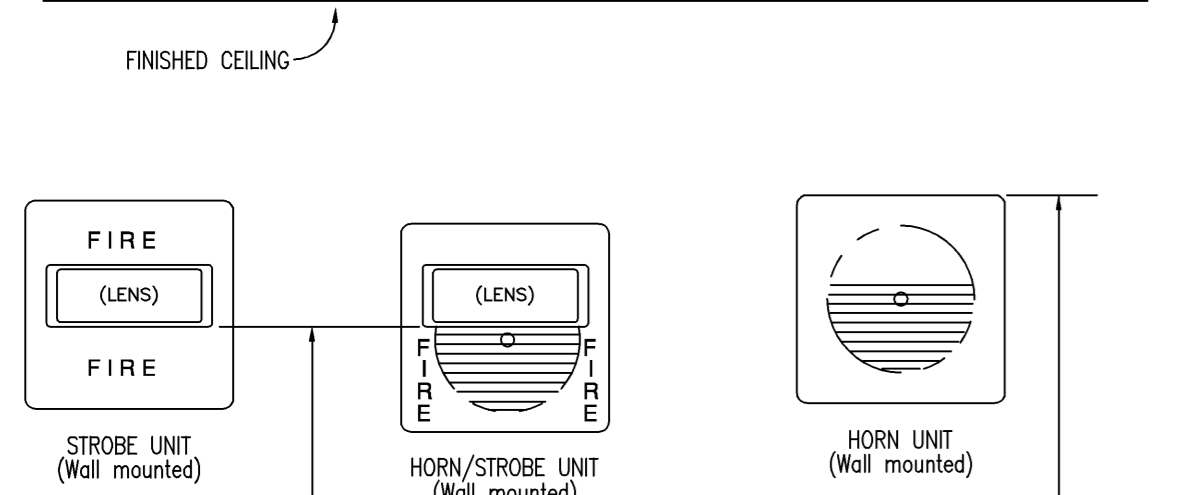




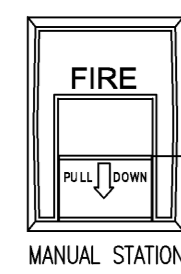
**MOUNTING DETAILS**



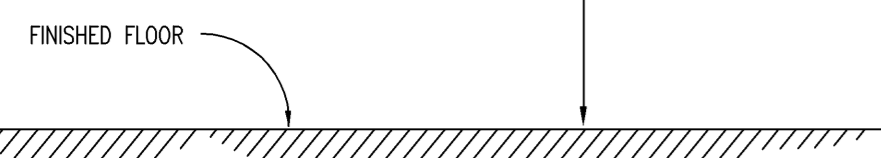
WALL MOUNTED APPLIANCES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80 IN. (2.03 m) AND NOT GREATER THAN 96 IN. (2.50 m) ABOVE THE FINISH FLOOR. (NFPA 72, 1999 EDITION, CHAPTER 4-4.4)

IF CEILING HEIGHTS ALLOW, WALL-MOUNTED APPLIANCES SHALL HAVE THEIR TOPS ABOVE THE FINISHED FLOORS AT HEIGHTS OF NOT LESS THAN 80 IN. (2.03 m) AND BELOW THE FINISHED CEILING AT HEIGHTS OF NOT LESS THAN 6 IN. (152 MM). (NFPA 72, 1999 EDITION, CHAPTER 4-3.5.1)

TYPICAL ELEVATION DETAIL OF AUDIBLE & VISUAL ALARM DEVICE



THE OPERABLE PART OF EACH MANUAL FIRE ALARM BOX SHALL BE 48" ABOVE FLOOR LEVEL. (CEC 2001, SEC. 760.16)

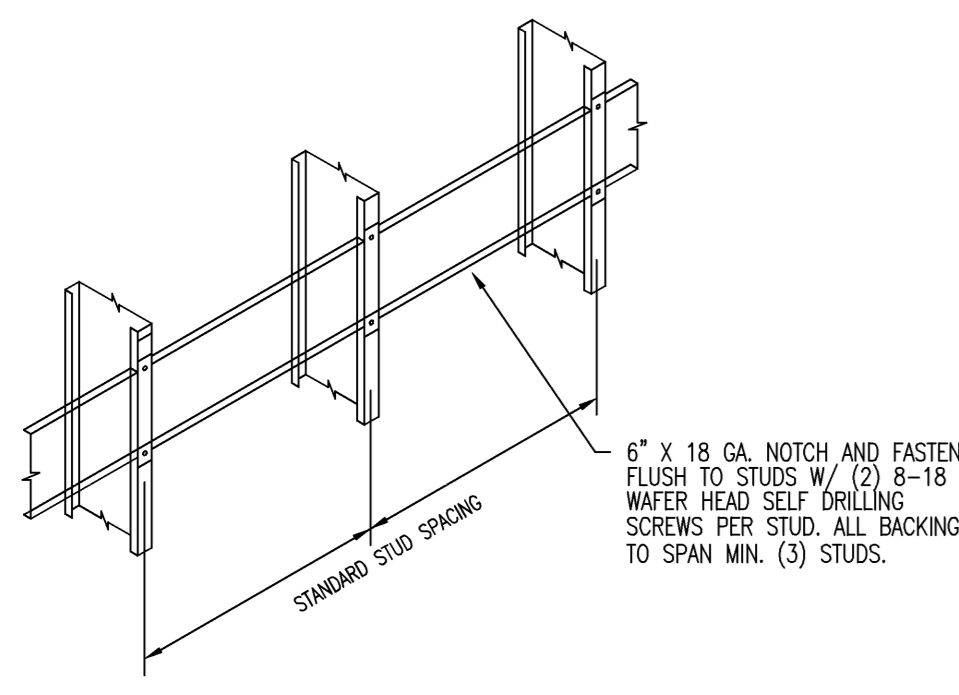


TYPICAL ELEVATION DETAIL OF MANUAL PULL STATION

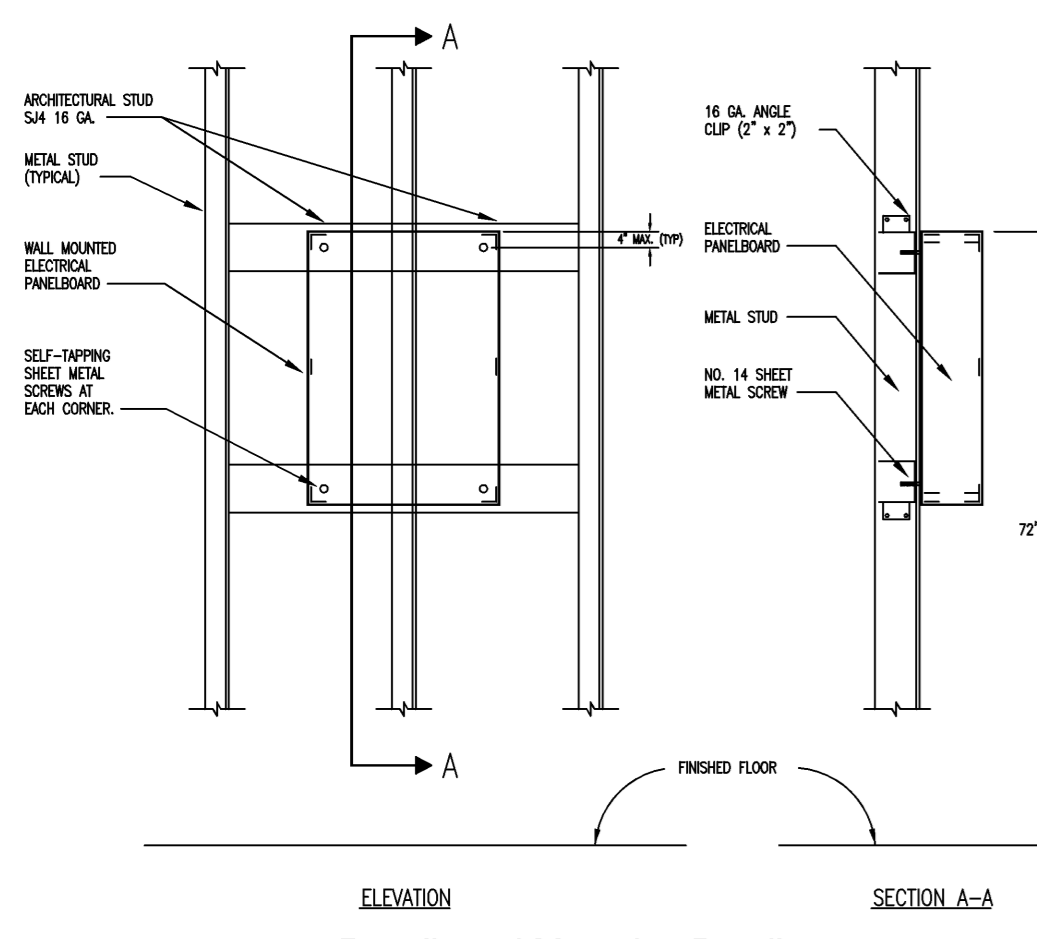
**PANEL ANCHORAGE NOTE**

ATTACHMENT OF EQUIPMENT WEIGHING LESS THAN 400 LBS. AND SUPPORTED DIRECTLY ON FLOOR OR ROOF STRUCTURE, FURNITURE OR TEMPORARY OR MOVABLE EQUIPMENT AND EQUIPMENT WEIGHING LESS THAN 20 LBS. THAT IS SUPPORTED BY VIBRATION ISOLATION DEVICES SUSPENDED FROM ROOF, WALL OR FLOOR NEED NOT BE DETAILED ON PLANS (CBC TITLE 24, PART 2, SECTION 1630A.1). HOWEVER, SUCH EQUIPMENT MUST BE SUPPORTED AND ANCHORED TO RESIST FORCES PRESCRIBED BY SECTION 1630A.2 AND THE ANCHORAGE SHALL BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD AND CSHIPD AS PART OF FIELD REVIEWS/INSPECTIONS. THE INSPECTOR OF RECORDS SHALL ASSURE THAT THE ABOVE REQUIREMENTS ARE ENFORCED.

THE PS-12/24-8 POWER BOOSTER PANELS EACH WEIGHS LESS THAN 20 LBS. INCLUDING BATTERIES.



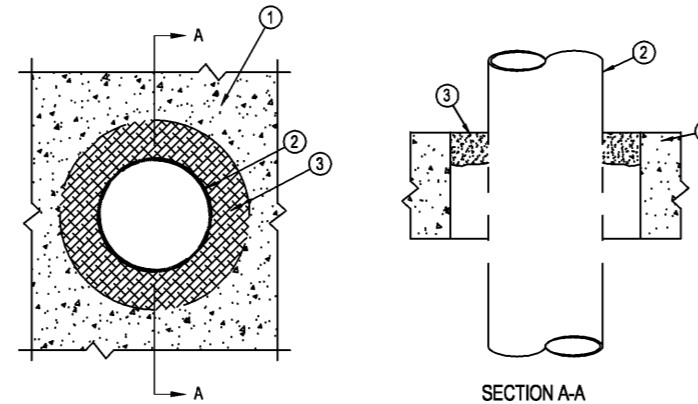
Metal Backing Gypsum Board Wall For Panel Mounting



TYPICAL MOUNTING OF EQUIPMENT WEIGHING OVER 20 LBS. (120 LBS MAXIMUM)

**THROUGH-PENETRATION FIRESTOP SYSTEM DETAILS**

**SYSTEM NO. CAJ1027 (FORMERLY SYSTEM NO. 202)**  
F RATING - 3 HOUR  
T RATING - 0 HOUR



1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX THROUGH OPENING SIZE IS 12.4 SQ. IN.

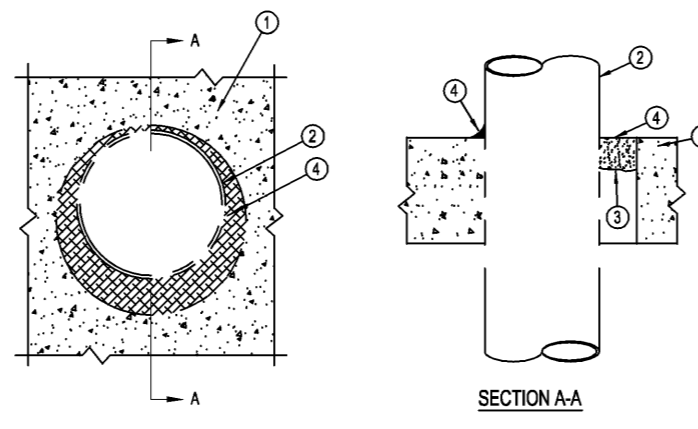
SEE CONCRETE BLOCKS (CAZT) CATEGORY IN FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. PIPE OR CONDUIT - NOM. 10 IN. DIA. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 6 IN. DIA. (OR SMALLER) RIGID STEEL CONDUIT, NOM 4 IN. DIA. (OR SMALLER) RIGID STEEL EMT OR NOM 3 IN. DIA. (OR SMALLER) TYPE I (OR HEAVIER) COPPER PIPE, MAX ONE PIPE OR CONDUIT PER THROUGH OPENING. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF OPENING IS 1/4 IN. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF OPENING IS 0 IN. (POINT CONTACT). PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

3. FILL VOID OR CAVITY MATERIALS - PUTTY-MOLDABLE PUTTY MATERIAL, KNEADED BY HAND AND APPLIED TO FILL ANNULAR SPACE TO A MIN DEPTH OF 1 IN FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED PUTTY THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL.

MINNESOTA MINING & MFG. CO. - MFS-5A BEARING THIS CLASSIFICATION MARKING.

**SYSTEM NO. CAJ1044 (FORMERLY SYSTEM NO 319)**  
T RATING - 0 HR  
L RATING AT AMBIENT - 2 CFM/SQ FT (SEE ITEM 4)  
L RATING AT 400 F - LESS THAN 1 CFM/SQ FT (SEE ITEM 4)



1. FLOOR WALL ASSEMBLY - LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE, EXCEPT AS NOTED IN TABLE UNDER ITEM 4. MIN THICKNESS OF SOLID CONCRETE FLOOR OR WALL ASSEMBLY IS 4-1/2 IN. FLOOR MAY ALSO BE CONSTRUCTED OF ANY MIN 8 IN. THICK UL CLASSIFIED HOLLOW-CORE, PRECAST CONCRETE UNITS. WHEN FLOOR IS CONSTRUCTED OF HOLLOW-CORE PRECAST CONCRETE UNITS, PACKING MATERIALS (ITEM 3) AND CALKULK FILL MATERIAL (ITEM 4) TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE FLOOR. FLUSH WITH FLOOR SURFACE. WALL ASSEMBLY MAY ALSO BE CONSTRUCTED OF CLASSIFIED CONCRETE BLOCKS. MAX DIA. OF OPENING IS 12.4 SQ. IN. SEE CONCRETE BLOCKS (CAZT) AND PRECAST CONCRETE UNITS (CFTV) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

1A. STEEL SLEEVE - OPTIONAL. NOT SHOWN. NOM 18 IN. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL SLEEVE CAST OR GROUDED INTO FLOOR OR WALL ASSEMBLY. SLEEVE MAY EXTEND A MAX. OF 2 IN. ABOVE TOP FLOOR OR BEYOND EITHER SURFACE OF WALL.

2. PIPE OR CONDUIT - NOM 30 IN. DIA. (OR SMALLER) CAST IRON OR SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 8 IN. DIA. (OR SMALLER) RIGID STEEL CONDUIT, NOM 3 IN. DIA. (OR SMALLER) RIGID STEEL EMT OR NOM 4 IN. DIA. (OR SMALLER) TYPE I (OR HEAVIER) COPPER PIPE OR NOM 4 IN. DIA. (OR SMALLER) STEEL ELECTRICAL METALIC TUBING. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING IS 0 IN. (POINT CONTACT). PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

3. PACKING MATERIAL - POLYETHYLENE BACKER ROD OR NOM 1 IN. THICKNESS OF TIGHTLY PACKED MINERAL WOOL BATT OR GLASS FIBER INSULATION FORMERLY PACKED INTO OPENING AS PERMANENT FORM. PACKING MATERIAL TO BE RECEDESSED FROM TOP SURFACE OF FLOOR OF FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CALKULK FILL MATERIAL (ITEM 4).

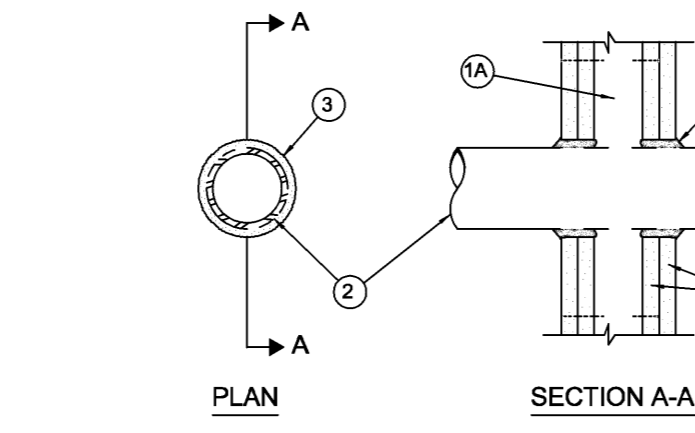
4. FILL VOID OR CAVITY MATERIAL - CALKULK - APPLIED TO FILL THE ANNULAR SPACE FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED CALKULK THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL FLUSH WITH WALL SURFACE. THE HOURLY F RATING AND THE MIN REQUIRED CALKULK THICKNESS ARE DEPENDENT UPON A NUMBER OF PARAMETERS, AS SHOWN ON THE FOLLOWING TABLE.

MIN FLOOR OR WALL THICKNESS IN.	NOM PIPE TUBE OR CONDUIT DIA. IN.	MAX ANNULAR SPACE IN.	MAX CALKULK THICKNESS IN.	F RATING, HR
2-1/2	12-1/2	1-3/8	1/2	2
2-1/2	12-1/2	2-1/8	1/2	2
4-1/2	12-6	1-3/8	1/4(6)	2
4-1/2	12-1/2	1-1/2	1/2	3
4-1/2	22-3/8	2	1	3
5-1/2	22-3/8	2	2	4
5-1/2	12-3/8	1-3/8	1/2	3

(6) MIN 3 IN THICKNESS OF MINERAL WOOL BATT INSULATION REQUIRED IN ANNULAR SPACE (8) MIN 1 IN THICKNESS OF MINERAL WOOL BATT INSULATION REQUIRED IN ANNULAR SPACE ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. (1) MIN 1 IN THICKNESS OF CALKULK TO BE INSTALLED FLUSH WITH EACH SURFACE OF FLOOR OR WALL ASSEMBLY.

MINNESOTA MINING & MANUFACTURING CO. - TYPES CP-25 WB, CP-25 WB+ (NOTE: L RATING AND OR USE OF OPTIONAL SLEEVE APPLY ONLY WHEN TYPE CP-25WB+ CALKULK IS USED).

**SYSTEM NO. WL1001 (FORMERLY SYSTEM NO 147)**  
F RATING - 1 & 2 HOURS  
T RATING - 0, 1, 1-1/2 & 2 HOURS



1. WALL ASSEMBLY - THE 1-2,3 OR 4 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL UL OR IAPRO SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:  
A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS MAX 2 IN. FIRE RATED ASSEMBLYS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF 16 IN. (LUMBER SPAN) 16 IN. (LUMBER SPAN) 2" BY 4" LUMBER. END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3/8 IN. WIDE BY 1.58 IN. DEEP CHANNELS SPACED MAX 24 IN.  
B. WALLBOARD GYPSUM - NOM 1/2 OR 5/8 IN. THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENERS TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL UL OR IAPRO SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIA. OF OPENING IS 15-1/2 IN.

2. PIPE OR CONDUIT - NOM 12 IN. DIA. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 12 IN. DIA. (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. DIA. (OR SMALLER) CLASS 90 (OR HEAVIER) CAST IRON PRESSURE PIPE, NOM 8 IN. DIA. (OR SMALLER) STEEL CONDUIT, NOM 4 IN. DIA. (OR SMALLER) STEEL ELECTRICAL METALIC TUBING OR TYPE I (OR HEAVIER) COPPER TUBING OR NOM 1 IN. DIA. (OR SMALLER) FLEXIBLE STEEL CONDUIT. WHEN COPPER PIPE OR FLEXIBLE STEEL CONDUIT IS USED, MAX F RATING OF FIRESTOP SYSTEM IS 2 HOURS. STEEL PIPES OR CONDUITS LARGER THAN NOM 4 IN. DIA. MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS. A MAX OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.

3. FILL VOID OR CAVITY MATERIAL - CALKULK - CALKULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN 1/4 IN. DIA. BEAD OF CALKULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS GRESS FROM THE WALL. CALKULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY F RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY F RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED AS TABULATED BELOW:

MAX PIPE OR CONDUIT DIA. IN.	ANNULAR SPACE IN.	F RATING HR	T RATING HR
1	0 TO 3/16	1 OR 2	0, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1/4	1 OR 2	0
4	3 TO 1-1/2(8)	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0

\* WHEN COPPER PIPE IS USED, T RATING IS 0 H  
#0 TO 1-1/2 IN. ANNULAR SPACE APPLIES ONLY WHEN TYPE CP-25 WB+ CALKULK IS USED.  
MINNESOTA MINING & MFG. CO. - TYPES CP-25 WB, CP-25 WB+, CP-25 WB+ (NOTE: L RATING AND OR USE OF OPTIONAL SLEEVE APPLY ONLY WHEN TYPE CP-25 WB+ CALKULK IS USED).

**(E) FIRE ALARM SEQUENCE OF OPERATION MATRIX**

NOTE:  
BLANK = NOT APPLICABLE  
R = REQUIRED ACTION

	FACE ALARM, SERVICE BUILDING & MAIN FAC, BUILDING 7	FACE ALARM, SERVICE BUILDING & MAIN FAC, BUILDING 7	FACE ALARM, SERVICE BUILDING & MAIN FAC, BUILDING 7	ANNUNCIATE TROUBLE @ RCC	ANNUNCIATE SUPERVISORY @ RCC	ACTIVATE AUDIO VISUAL THROUGHOUT THE BLDG.	ELEVATOR RECALL	ELEVATOR RECALL	ALTERNATE ELEVATOR RECALL	RECALL ELEVATORS TO DESIGNATED FLOOR AND STOP	ELEVATOR SHUTDOWN	MANUAL RESET CAPABILITY DURING ABNORMAL CONDITIONS	HAC SHUTDOWN	FIRE SMOKE DAMPER ACTIVATION
MANUAL PULL STATION	X					X								
AREA SMOKE DETECTOR	X	X				X								
SMOKE DETECTORS ON EITHER SIDE OF FIRE RATED DOOR ACROSS CORRIDOR	X		X			X								
DUCT SMOKE DETECTOR (HAC UNITS)	X		X			X							X	
DUCT SMOKE DETECTOR (FIRE SMOKE DAMPER)	X		X			X							X	X
AREA SMOKE DETECTOR (DEDICATED FOR PSD)	X		X			X							X	X
ELEVATOR LOBBY - SMOKE DETECTOR - EXCEPT 1ST FLOOR							X							
ELEVATOR LOBBY - SMOKE DETECTOR - 1ST FLOOR ONLY								X						
HEAT DETECTOR - ELEVATOR MACHINE RM. OR SHMT									X					
WATERFLOW SWITCH	X		X			X								
VALVE TAMPER		X				X								
INITIATING Ckt STYLE C (CLASS B)														
OPEN WIRE	X			X									R	
GROUND WIRE	X			X										
SHORTED WIRES	X			X										
LOSS OF CARRIER	X			X										
NOTIFICATION Ckt STYLE Y (CLASS B)														
OPEN WIRE	X			X									R	
GROUND WIRE	X			X										
SHORTED WIRES	X			X										
SIGNALING LINE Ckt STYLE 3 (CLASS B)														
OPEN WIRE	X			X									R	
GROUND WIRE	X			X										
SHORTED WIRES	X			X										
WIRE TO WIRE SHORT & OPEN	X			X										
WIRE TO WIRE SHORT & GROUND	X			X										
OPEN & GROUND	X			X										
LOSS OF CARRIER	X			X										

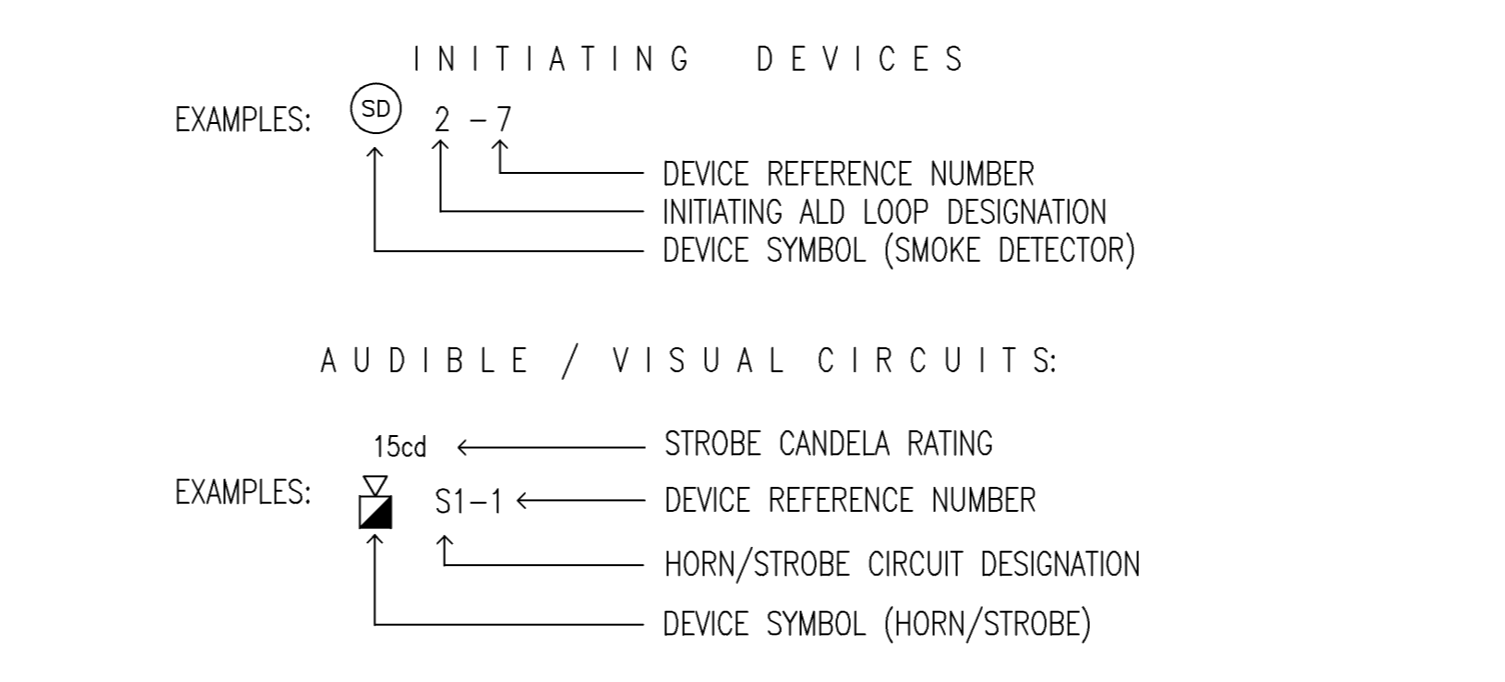
**WIRING GUIDELINES**

**PLENUM CABLE VS. NON-PLENUM**  
THE NEC RECOGNIZES 3 TYPES OF POWER LIMITED FIRE ALARM CABLING:  
FPL - THIS IS A GENERAL USE POWER LIMITED FIRE ALARM CABLE. IT CANNOT BE USED IN A PLENUM SPACE OR FOR RISERS (CABLING BETWEEN FLOORS), CABLE MUST BE IN CONDUIT.  
FPLR - THIS IS A POWER LIMITED RISER RATED CABLE THAT CAN BE USED FOR GENERAL PURPOSES OR BETWEEN FLOORS. IT CANNOT BE USED IN A PLENUM SPACE, CABLE MUST BE IN CONDUIT.  
FPLP - THIS IS A POWER LIMITED CABLE THAT CAN BE USED IN A PLENUM, RISER, OR FOR GENERAL PURPOSE.  
A PLENUM IS ANY AREA USED TO CONDUCT ENVIRONMENTAL AIR. PLENUM SPACES CAN BE DUCTWORK, THE SPACE ABOVE A DROP CEILING, OR BELOW A RAISED FLOOR. BECAUSE THESE SPACES ARE BEING USED FOR THE AIR HANDLING SYSTEM, THERE ARE STRICT RULES THAT MUST BE FOLLOWED TO REDUCE THE RISK OF INTRODUCING TOXIC FUMES IN THE EVENT OF A FIRE. SINCE FIRE ALARM CABLING IS OFTEN INSTALLED EXPOSED, WITHOUT CONDUIT, ABOVE DROP CEILING THE CABLING MUST BE RATED FOR USE IN A PLENUM SPACE.

**WIRING REQUIREMENTS**

- THE DRAIN SHIELD IS A VERY IMPORTANT PART OF THE SYSTEM INSTALLATION. WE WOULD NOT SPECIFY SHIELDED CABLE IF IT WAS NOT NECESSARY. SHIELDS SHOULD BE KEPT CONTINUOUS THROUGHOUT THE CIRCUIT AND KEPT FREE FROM ANY REFERENCE TO EARTH GROUND.
- SHIELDED CABLE CAN BE FPL, FPLR, OR FPLP. SIEMENS INTELLIGENT ADDRESSABLE DEVICES REQUIRE SHIELDED CABLE.
- NOTIFICATION APPLIANCES (I.E. - HORN/STROBES, HORNS, ETC.) REQUIRE NON-SHIELDED CABLE.
- UNDERGROUND CABLE, WHETHER OR NOT INSTALLED IN CONDUIT, SHALL BE LISTED AS UNDERGROUND BURIAL TYPE.
- WIRING IS TO BE INSTALLED POINT TO POINT WITH NO SPLICING.

**WIRING REQUIREMENTS**



**MXL WIRING SCHEDULE**

SYMBOL	RECOMMENDED WIRE TYPE	USED ON
	2-CONDUCTOR, #16 AWG SOLID TWISTED SHIELDED CABLE Cable Part Number: FITSP16SRD-FPLR (CONDUIT) FITSP16SRD-FPLP (PLENUM)	ADDRESSABLE ALARM INITIATING DEVICES: - FP-SERIES SMOKE DETECTORS - TRI-SERIES INTERFACE MODULES - AD-SERIES DUCT DETECTORS - MSI-SERIES FULL STATION
	2-CONDUCTOR, #12 AWG SOLID OR STRANDED (PER NEC) Cable Part Number: FA-1202C-1-1N-03 (CONDUIT) FA-1202C-1-2N-03 (PLENUM)	NOTIFICATION APPLIANCE CIRCUIT: - STROBE CIRCUIT - HORN/STROBE CIRCUIT
	2-CONDUCTOR, #16 AWG SOLID TWISTED SHIELDED CABLE Cable Part Number: FITSP16SRD-FPLR (CONDUIT) FITSP16SRD-FPLP (PLENUM)	NOT USED VOID ALSO CIRCUIT: - SPEAKER CIRCUIT
	2-CONDUCTOR, #12 AWG SOLID OR STRANDED (PER NEC) Cable Part Number: FA-1202C-1-1N-03 (CONDUIT) FA-1202C-1-2N-03 (PLENUM)	24 VDC POWER TO: - FIRE ALARM PANELS - DOOR HOLDERS
	3-CONDUCTOR, #18 AWG SOLID TWISTED SHIELDED CABLE Cable Part Number: FITSP18SRD-FPLR (CONDUIT) FITSP18SRD-FPLP (PLENUM)	NOT USED TELEPHONE CIRCUIT: - FIREMAN'S TELEPHONE JACK - FIREWOMEN'S REMOTE TELEPHONE STATION
	2-CONDUCTOR, #16 AWG SOLID TWISTED CABLE Cable Part Number: FITP16SRD-FPLR (CONDUIT) FITP16SRD-FPLP (PLENUM)	MISCELLANEOUS FIELD DEVICES: - TRI TO MONITORED DEVICES - WATERFLOW SWITCH / TAMPER SWITCH - DIGITAL DIALER TO FACP - TSM-1 TEST SWITCH
	2-CONDUCTOR, #12 AWG SOLID OR STRANDED (PER NEC) Cable Part Number: FA-1202C-1-1N-03 (CONDUIT) FA-1202C-1-2N-03 (PLENUM)	NOT USED NOTIFICATION APPLIANCE CIRCUIT: - HORN CIRCUIT - CHIME CIRCUIT
	2-CONDUCTOR, #16 AWG SOLID TWISTED SHIELDED CABLE Cable Part Number: FITSP16SRD-FPLR (CONDUIT) FITSP16SRD-FPLP (PLENUM)	"M-NET" - MXL NETWORK WIRING: - MMB-2 / NET-7 / NET-4 - MMB-2 / PSR-1 / ANN / FIP / FDP
	2-CONDUCTOR, #12 AWG SOLID OR STRANDED (PER NEC) Cable Part Number: FA-1202C-1-1N-03 (CONDUIT) FA-1202C-1-2N-03 (PLENUM)	EXTENDER PANEL ACTIVATION: - SIEMENS PAD-3 EXTENDER PANEL - WHEELLOCK PS-12/24-8 EXTENDER PANEL
	2-CONDUCTOR, #12 AWG SOLID, THIN (GROUNDED WIRE)	120 VAC POWER WIRING TO: - F.A. CONTROL PANELS - AMPLIFIER PANELS - POWER SUPPLY PANEL - FIRE ALARM PRINTERS

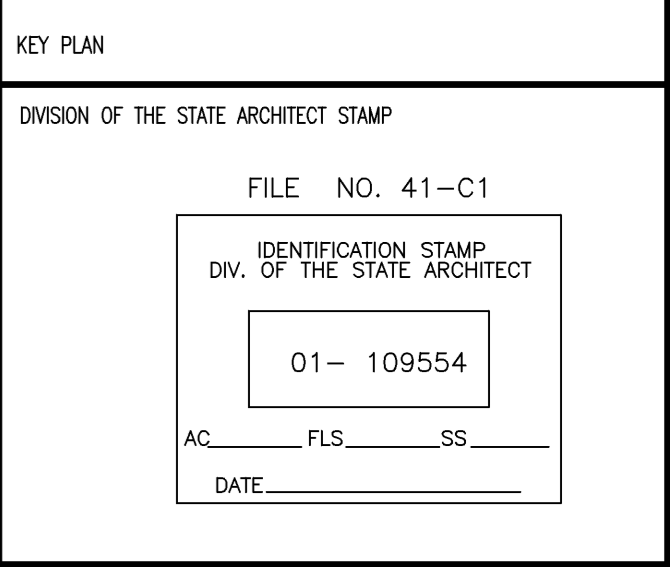
**WIRING NOTE:**

- WIRING FOR NOTIFICATION APPLIANCE CIRCUIT IS CLASS B, STYLE Y.
- WIRING FOR INITIATING DEVICES IS CLASS B, STYLE C.
- SEE WIRING GUIDELINES FOR CABLE TYPE USE.
- CONDUIT FILL < 40%, 3/4" CONDUIT.
- WHERE CIRCUIT ARE RUN UNDERGROUND, USE UNDERGROUND RATED CABLE.  
2AS-1602POS = 2 CONDUCTOR #16 GAUGE SOLID TWISTED SHIELDED "UNDERGROUND CABLE"  
2A-1202 = 2 CONDUCTOR #12 GAUGE SOLID "UNDERGROUND CABLE"

THIS DRAWING AND DESIGNS THEREON SHALL NOT BE DUPLICATED, USED OR PROCURED BY OTHERS FOR PROCUREMENT OR OTHER PURPOSE (EXCEPT AS OTHERWISE AUTHORIZED BY CONTRACT) WITHOUT WRITTEN PERMISSION OF SIEMENS BUILDING TECHNOLOGIES, INC. FIRE SAFETY DIVISION. ALL OTHER REPRODUCTIONS SHALL BEAR THIS NOTICE.

**REVISIONS**

No.	Revision	By	Date	Appr.
1	ENGINEER OF RECORD BACKCHECK COMMENTS	BHD	5/2/05	KR
2	AS-BUILT DRAWINGS DATED 2/12/07	MM	2/13/07	
3	AS-BUILT DRAWINGS BUILDING 8 RETRO FIT DATED 2/12/07	AO	9/23/08	
4	AS-BUILT DRAWINGS BUILDING 8 RETRO FIT DATED 3/12/09	RB	3/12/09	



DESIGNED BY:

**INTERFACE ENGINEERING**

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Fax no. (415)489-7288

CONTRACTOR'S NAME & ADDRESS:

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1441 Bayport Avenue  
San Carlos, CA 94070

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Hayward, California 94545-2901  
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California State C10 License No. 758796  
U.L. Certificate ID No. 324787-001

JOB NAME & LOCATION (STREET ADDRESS)

**CAÑADA COLLEGE BUILDING 8 RETROFIT**

4200 Farm Hill Boulevard  
Redwood City, California 94061

**MISC. DETAILS**

SHEET CONTENTS:

INSTALLATION TYPE  
 NEW INSTALLATION  
 DESIGN/BUILD  
 PER CONTRACT DOCUMENT  
 EXISTING BASE JOB # \_\_\_\_\_  
 OTHERS - -

SYSTEM SALES REP.: Kelly Rogers

PROJECT MANAGER: Mark Millard

DRAWN BY: Adrian Oliveros

CAD FILENAME:

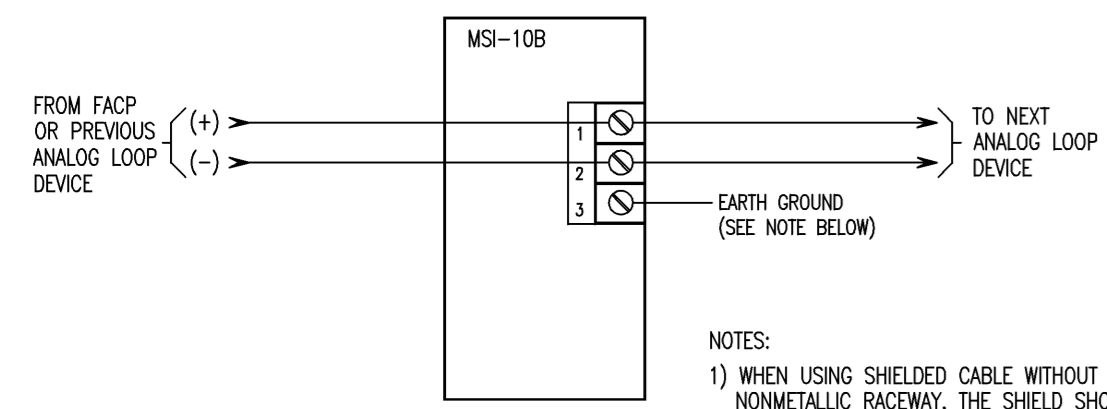
SCALE:

DATE DRAWN: September 17, 2008  
ISSUE DATE: April 6, 2009

SHEET OF: 2 6  
JOB NUMBER: 440P-041807

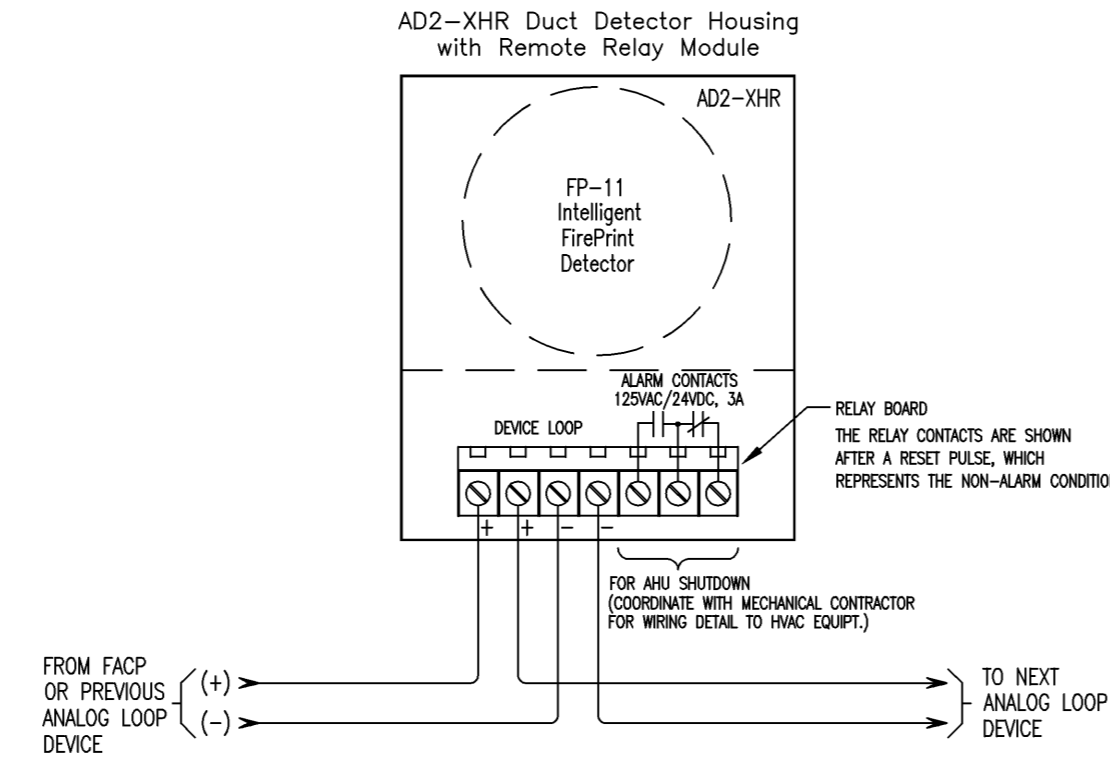


# TYPICAL WIRING OF FIELD DEVICES



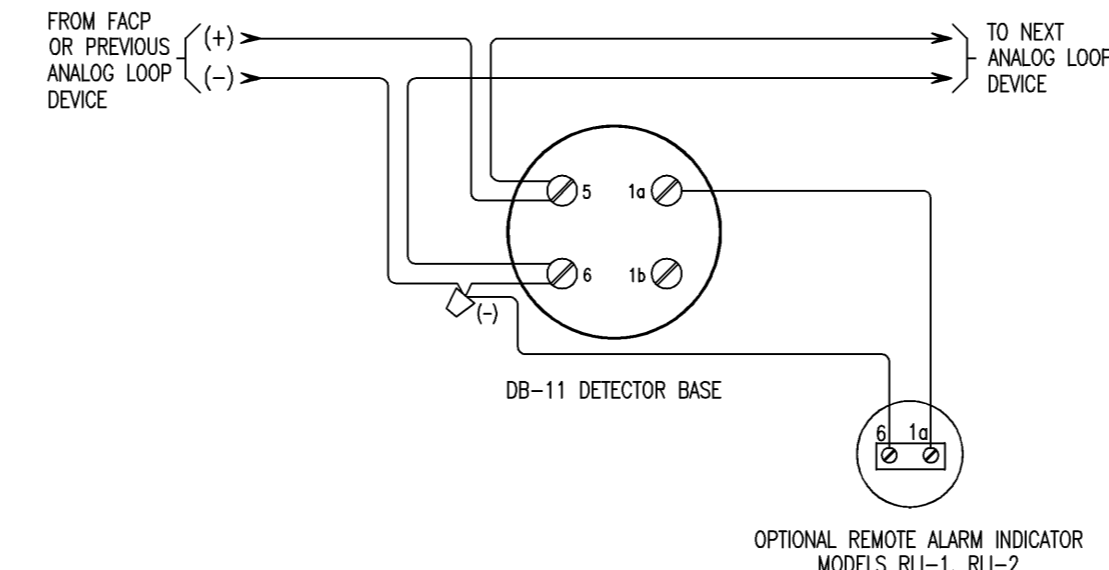
- NOTES:
- 1) WHEN USING SHIELDED CABLE WITHOUT METAL RACEWAY OR WITH CONDUIT NONMETALLIC RACEWAY, THE SHIELD SHOULD BE TERMINATED AT THE DEVICE BOX AND THE DEVICE GROUND TERMINAL. IF THE DEVICE BOX IS ALREADY GROUNDED BY ANOTHER MEANS, SUCH AS BEING MOUNTED TO A GROUNDED STRUCTURE, THE WIRE SHIELDS SHOULD BE CONTINUOUS AND MUST BE GROUNDED SOLELY AT THE POINT OF ORIGIN; FOR EXAMPLE, AT THE CONTROL PANEL.
  - 2) WHEN USING SHIELDED CABLE WITH METAL RACEWAY, THE WIRING SHIELD SHOULD BE CONTINUOUS AND GROUNDED SOLELY AT THE POINT OF ORIGIN. THE DEVICE GROUND TERMINAL SHALL BE CONNECTED TO THE GROUND DEVICE BOX.
  - 3) WHEN USING METAL RACEWAY WITHOUT SHIELDED CABLE, CONNECT THE DEVICE GROUND TERMINAL TO THE GROUNDED DEVICE BOX.

**MSI-10B MANUAL PULL STATION (SINGLE ACTION)**

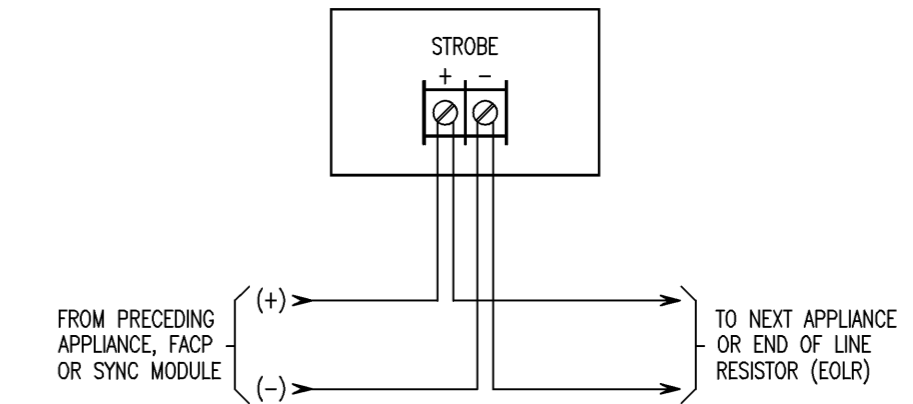


**AD2-XHR DUCT DETECTOR HOUSING with RELAY with FP-11 INTELLIGENT FirePrint SMOKE DETECTOR**

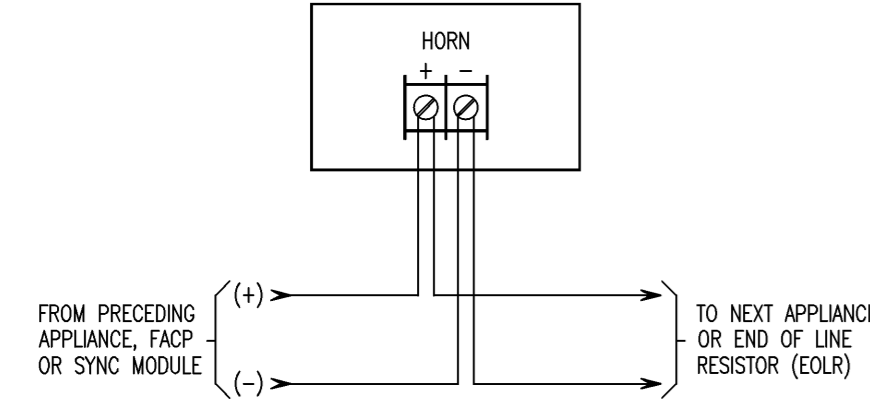
NOTE: THE AIR FLOW INSIDE THE DUCT MUST BE MORE THAN 100 FEET PER MINUTE FOR THE DUCT DETECTOR TO OPERATE PROPERLY.



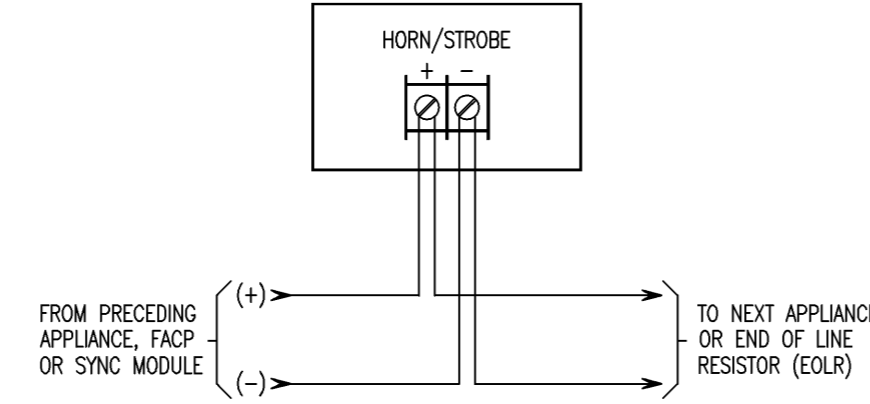
**FP-11 INTELLIGENT PHOTOELECTRIC FIRE DETECTOR with DB-11 DETECTOR BASE**



**RSS-24MCW & RSS-24MCC STROBE, 24VDC (Multi-Candela Appliance)**



**AH-24-R WHEELOCK 24VDC HORN (Indoor / Outdoor Appliance)**



**NS-24MCW HORN/STROBE, 24VDC (Multi Candela Two Wire Appliance)**

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4	AS-BUILT DRAWINGS BUILDING 8 RETRO FIT DATED 3/12/09	RB	3/12/09	

## KEY PLAN

DIVISION OF THE STATE ARCHITECT STAMP

FILE NO. 41-C1  
 IDENTIFICATION STAMP  
 DIV. OF THE STATE ARCHITECT  
 01- 109554  
 AC \_\_\_\_\_ FLS \_\_\_\_\_ SS \_\_\_\_\_  
 DATE \_\_\_\_\_

DESIGNED BY:

**INTERFACE ENGINEERING**

241 GRANT AVE ST 450  
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 Fax no: (415)489-7299

CONTRACTOR'S NAME & ADDRESS:

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 U.L. Certificate ID No. 324787-001

JOB NAME & LOCATION (STREET ADDRESS)

**CAÑADA COLLEGE BUILDING 8 RETROFIT**

4200 Farm Hill Boulevard  
 Redwood City, California 94061

SHEET CONTENTS:

**TYPICAL WIRING OF FIELD DEVICES**

INSTALLATION TYPE

- NEW INSTALLATION
- DESIGN/BUILD
- PER CONTRACT DOCUMENT
- EXISTING BASE JOB # \_\_\_\_\_
- OTHERS --

SYSTEM SALES REP.: Kelly Rogers

PROJECT MANAGER: Mark Millard

DRAWN BY: Adrian Oliveros

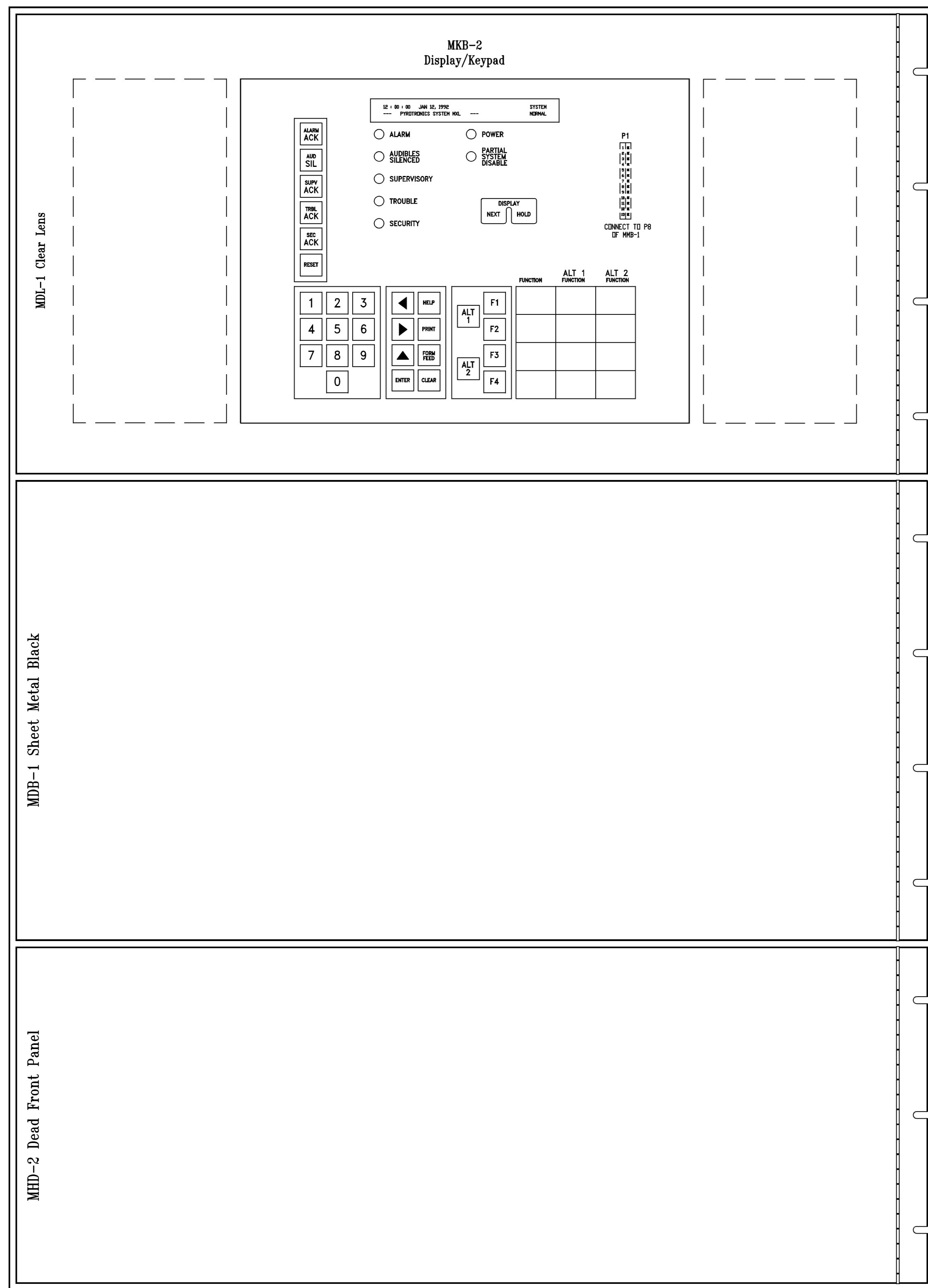
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SCALE:

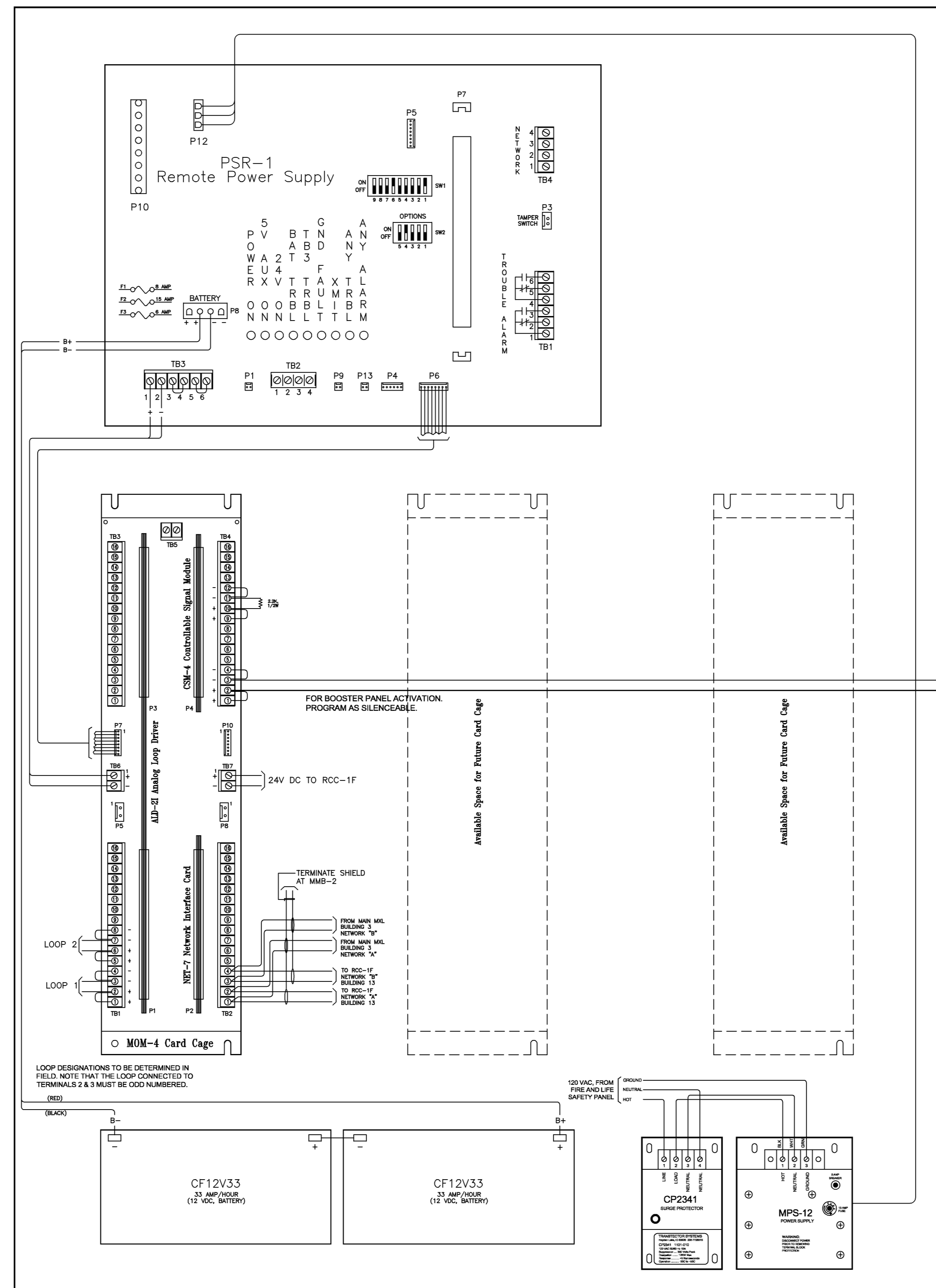
DATE DRAWN: September 17, 2008  
 ISSUE DATE: April 6, 2009

SHEET 3 OF 6  
 JOB NUMBER 440P-041807

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MXR-2 PANEL ENCLOSURE CONSISTING OF:  
 MDR-2 Backbox  
 MDR-2 Door



MXR-2 PANEL ENCLOSURE CONSISTING OF:  
 MDR-2 Backbox  
 MDR-2 Door

Internal View

### MXLR BATTERY CALCULATION - BUILDING 13

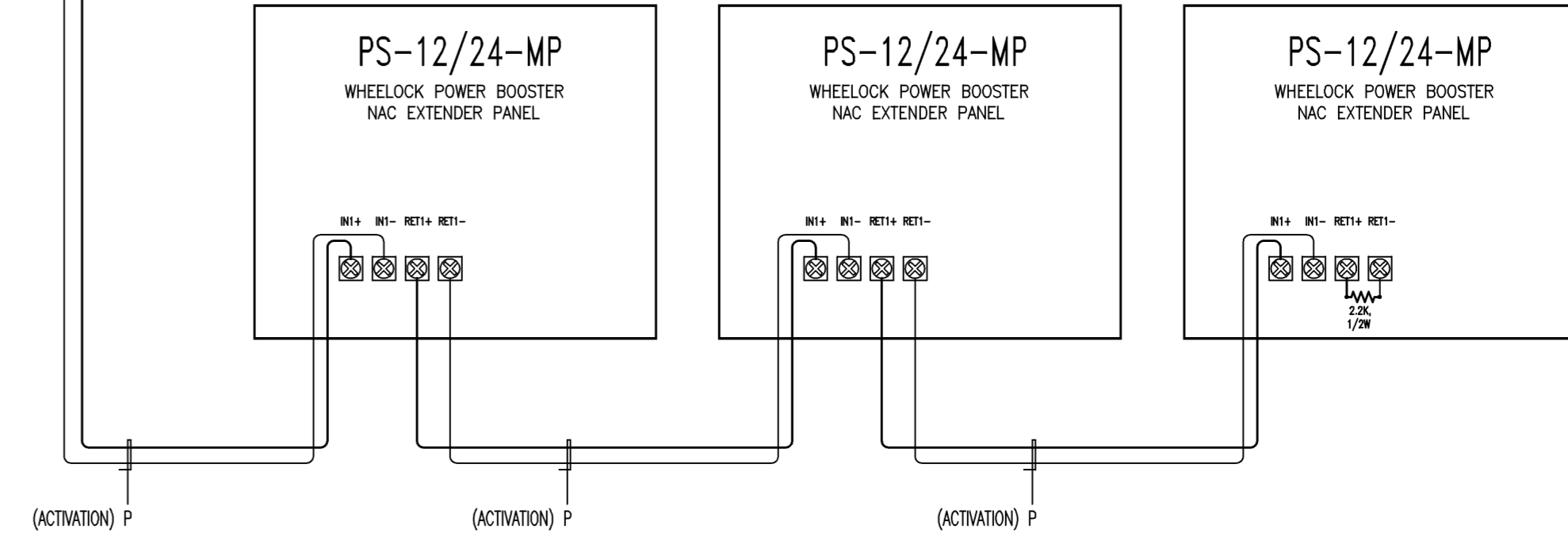
SUPERVISORY CURRENT				
DESCRIPTION	QTY	MODULE CURRENT	COL DEVICE CURRENT	TOTAL ROW CURRENT
PSR-1 REMOTE CONTROL PANEL	1	0.070		0.070
MKB-2 ANNUNCIATOR/KEYBOARD	1	0.005		0.005
ALD-2 ANALOG LOOP DRIVER	1	0.105		0.105
ALD LOOP	2		0.066	0.132
CSM-4 CONTROLLABLE SIGNAL MODULE	1	0.010		0.010
NOTIFICATION CIRCUITS	2		0.012	0.024
NET-7 NETWORK CARD	1	0.030		0.030
RCC-1 REMOTE COMMAND CENTER	0	0.075		0.000
<b>TOTAL CURRENT</b>				<b>0.376</b>

ALARM CURRENT		TOTAL CKT CURRENT LOAD
CIRCUIT A1		0.5
CIRCUIT A2		0
<b>TOTAL ALARM CURRENT (AMPS)</b>		<b>0.5</b>

SUMMARY	
A = TOTAL SUPERVISORY CURRENT x SUPERVISORY TIME REQUIRED <b>0.376</b> AMPS x 60 HR = <b>22.56</b> (AMP)HR	SUPERVISORY TIME REQUIRED—60 HR ALARM TIME REQUIRED—5 MINS. or 0.083 HR
B = TOTAL ALARM CURRENT x ALARM TIME REQUIRED <b>0.5</b> AMPS x 0.083 HR = <b>0.042</b> (AMP)HR	BATTERY PROVIDED—UB12330 (2) BATTERY SIZE—33 (AMP)HR
C = A + B = <b>22.602</b> (AMP)HR	TOTAL SYSTEM REQUIRED (A/H) = <b>22.602</b> AMP-HOUR BATTERY RESERVE AFTER 60 HOURS SUPERVISORY & 5 MINUTES ALARM (AMP-HOUR) = <b>10.399</b> AMP-HOUR



WIRING DIAGRAM - MULTIPLE WHELOCK PANEL ACTIVATION DETAIL

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KEY PLAN

DIVISION OF THE STATE ARCHITECT STAMP

FILE NO. 41-C1

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01- 109554

AC FLS SS

DATE

DESIGNED BY:

## INTERFACE ENGINEERING

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JOB NAME & LOCATION (STREET ADDRESS)

## CAÑADA COLLEGE BUILDING 8 RETROFIT

4200 Farm Hill Boulevard  
 Redwood City, California 94061

### SHEET CONTENTS: MAIN FIRE ALARM CONTROL PANEL

INSTALLATION TYPE

NEW INSTALLATION

DESIGN/BUILD

PER CONTRACT DOCUMENT

EXISTING BASE JOB # \_\_\_\_\_

OTHERS \_\_\_\_\_

SYSTEM SALES REP.: Kelly Rogers

PROJECT MANAGER: Mark Millard

DRAWN BY: Adrian Oliveros

CAD FILENAME:

SCALE:

DATE DRAWN: September 17, 2008

ISSUE DATE: April 6, 2009

SHEET OF: 4 6

JOB NUMBER: 440P-041807

#### NOTIFICATION CIRCUIT - NA1 VOLTAGE DROP CALCULATIONS

BASED ON POINT-TO-POINT OHM'S CALCULATIONS. ACCEPTABLE LIMIT: 1% @ 24V = 240 MVAO

OHMS = (OH FEET) x (2070000 PSI FEET) / (1000000 + (40 FEET) x (2070000)) + 2

AV 150cd	AV 300cd	AV 450cd	AV 750cd
0.184	0.184	0.184	0.184
0.092	0.092	0.092	0.092
0.350	0.350	0.350	0.350
0.420	0.420	0.420	0.420

DEVICES	TO DEVICES	LINEAR FEET BETWEEN DEVICES	RESISTANCE OF WIRES (OHMS)	LOAD ON RUN (AMPS)	VOLTAGE DROP (VOLTS)	ACCOM. VOLTAGE DROP (%)
1	2	25	0.154	0.060	0.009	0.009
2	3	25	0.154	0.192	0.023	0.023
3	4	30	0.184	0.396	0.073	0.106
4	5	35	0.215	0.488	0.105	0.216
5	6	50	0.307	0.632	0.163	0.374
6	7	25	0.154	0.624	0.096	0.469
7	NAC	30	0.184	0.808	0.149	0.618

Percent Loss: 2.58%

#### NOTIFICATION CIRCUIT - NA2 VOLTAGE DROP CALCULATIONS

BASED ON POINT-TO-POINT OHM'S CALCULATIONS. ACCEPTABLE LIMIT: 1% @ 24V = 240 MVAO

OHMS = (OH FEET) x (2070000 PSI FEET) / (1000000 + (40 FEET) x (2070000)) + 2

AV 150cd	AV 300cd	AV 450cd	AV 750cd
0.184	0.184	0.184	0.184
0.092	0.092	0.092	0.092
0.350	0.350	0.350	0.350
0.420	0.420	0.420	0.420

DEVICES	TO DEVICES	LINEAR FEET BETWEEN DEVICES	RESISTANCE OF WIRES (OHMS)	LOAD ON RUN (AMPS)	VOLTAGE DROP (VOLTS)	ACCOM. VOLTAGE DROP (%)
1	2	50	0.307	0.107	0.033	0.033
2	3	25	0.154	0.187	0.026	0.059
3	4	45	0.276	0.274	0.076	0.134
4	5	40	0.246	0.334	0.082	0.216
5	6	25	0.154	0.408	0.063	0.279
6	7	30	0.184	0.468	0.086	0.365
7	8	30	0.184	0.528	0.097	0.462
8	NAC	50	0.307	0.772	0.237	0.699

Percent Loss: 2.91%

#### SIEMENS

MODULE	QUANTITY	STANDBY 24VDC MODULE CURRENT	DEVICE CURRENT	TOTAL STANDBY 24VDC CURRENT
PSR-1	1	0.070		0.070
MKB-2	1	0.005		0.005
RCC-1/1F	1	0.075	0.024	0.075
CSM-4	1	0.010		0.034
ALD-2	1	0.105	0.240	0.345
NET-7/7M	1	0.030		0.030
<b>TOTAL SUPERVISORY CURRENT</b>				<b>0.509</b>
<b>TOTAL A X 24</b>				<b>13.416</b>
<b>BATTERY SIZE WITH ALARM RESERVE</b>				<b>17.441</b>

#### PS-24-BMC BATTERY CALCULATION SHEET

STANDBY BATTERY CALCULATION	STANDBY ALARM
PS-24-BMC	0.080
NAC CURRENT	0.240
<b>STANDBY AH = STANDBY A X 24 =</b>	<b>1.920</b>
<b>ALARM AH = ALARM A X 0.0833H =</b>	<b>0.120</b>
<b>TOTAL AH = ALARM AH + STANDBY AH =</b>	<b>2.040</b>
<b>BACKUP BATTERY = TOTAL AH X 1.1 =</b>	<b>2.244</b>

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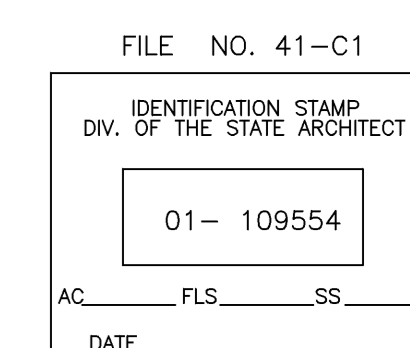
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KEY PLAN

DIVISION OF THE STATE ARCHITECT STAMP



DESIGNED BY:

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Fax no. (415)489-7299

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JOB NAME & LOCATION (STREET ADDRESS)

**CAÑADA COLLEGE BUILDING 8 RETROFIT**

4200 Farm Hill Boulevard  
Redwood City, California 94061

SHEET CONTENTS:

**FIRE ALARM RISER DIAGRAM**

INSTALLATION TYPE

- NEW INSTALLATION
- DESIGN/BUILD
- PER CONTRACT DOCUMENT
- EXISTING BASE JOB # \_\_\_\_\_
- OTHERS --

SYSTEM SALES REP.: Kelly Rogers

PROJECT MANAGER: Mark Millard

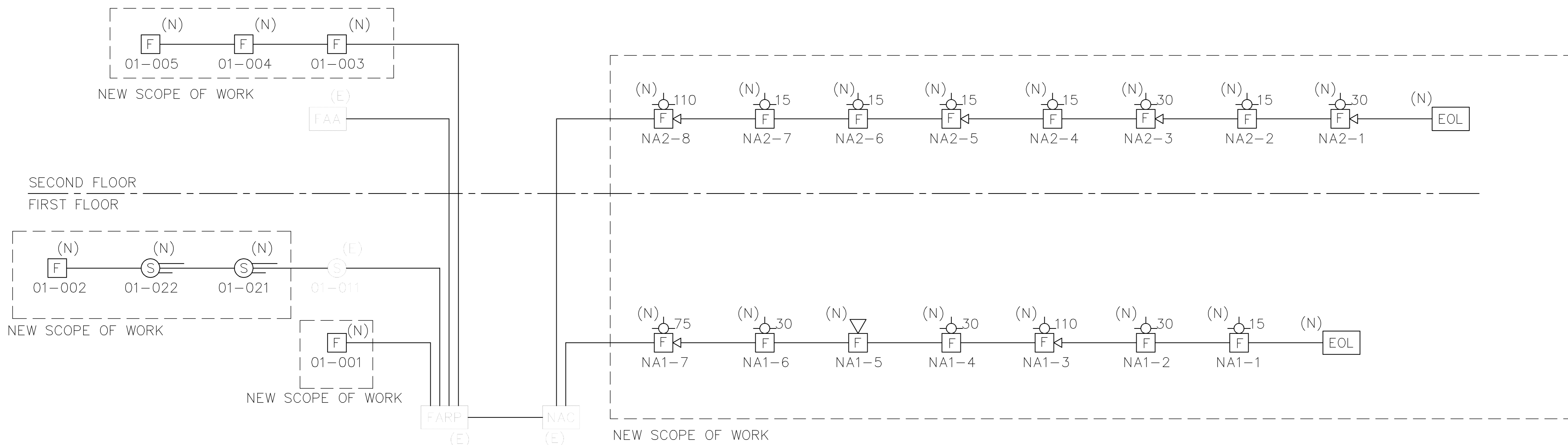
DRAWN BY: Adrian Oliveros

CAD FILENAME:

SCALE:

DATE DRAWN: September 17, 2008  
ISSUE DATE: April 6, 2009

SHEET 5 OF 6  
JOB NUMBER 440P-041807

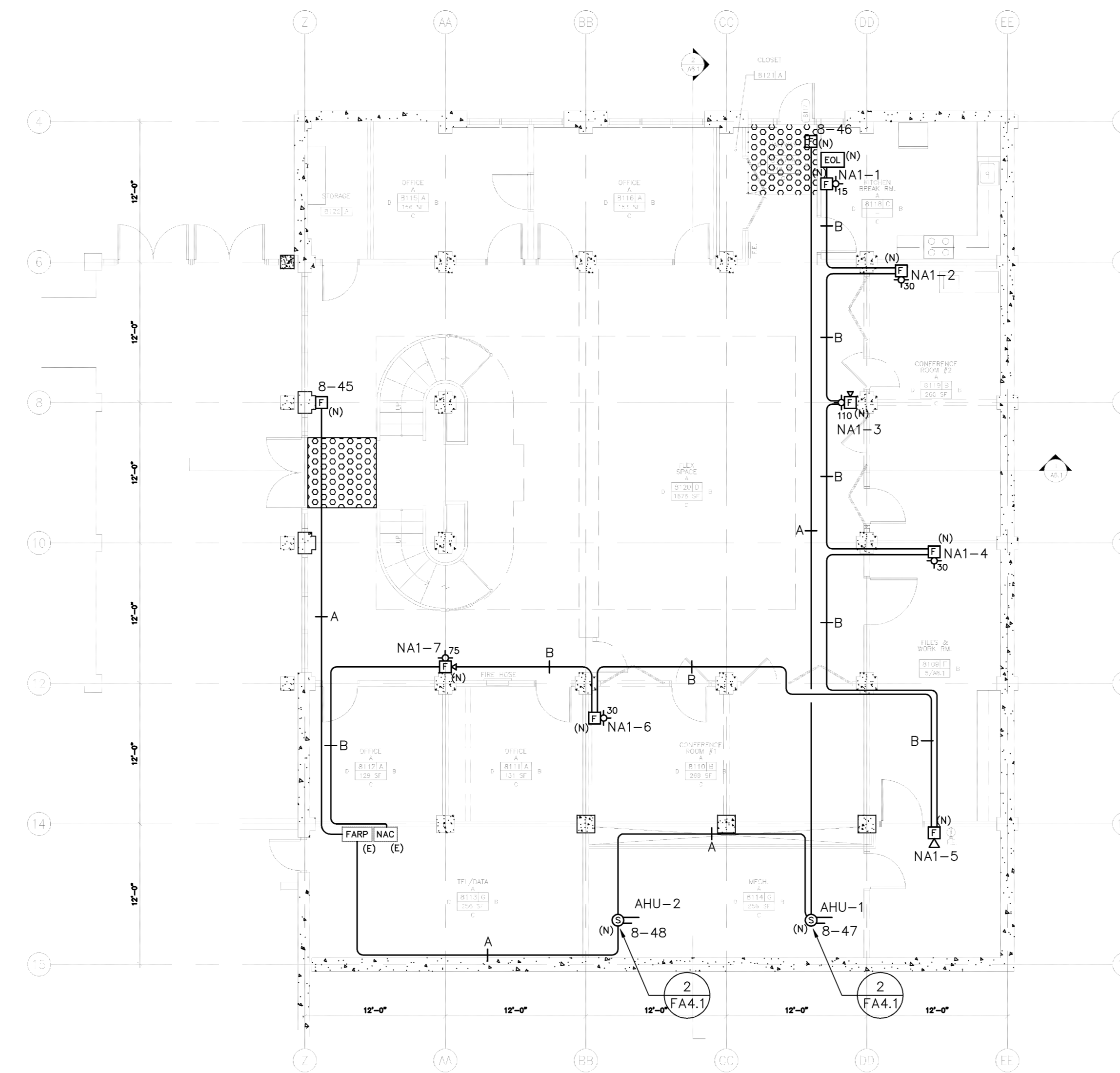


(N) NEW DEVICES  
(E) EXISTING DEVICES

**1 FIRE ALARM RISER DIAGRAM**  
NO SCALE

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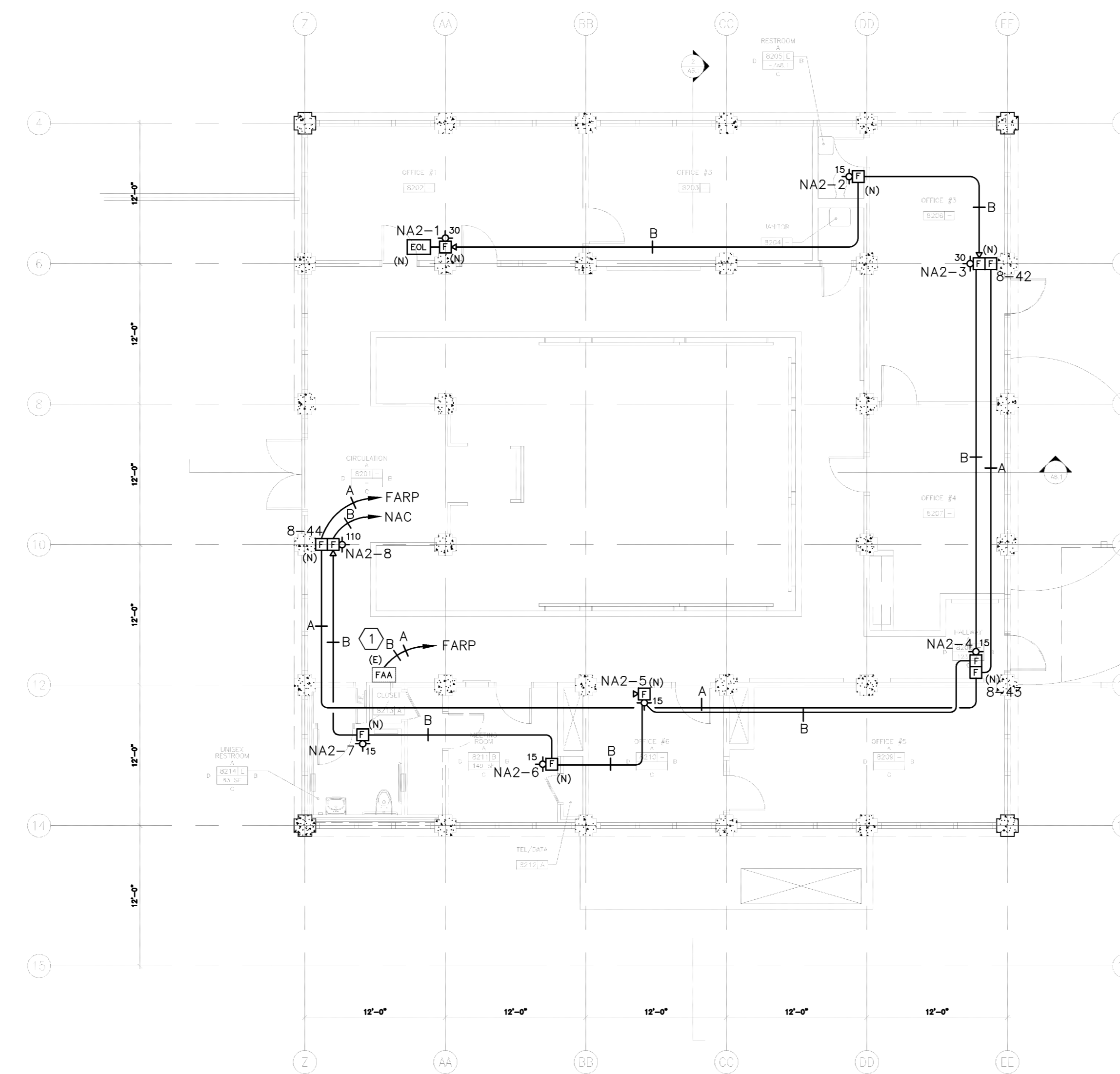
NEW SCOPE OF WORK



1 1ST FLOOR PLAN - FIRE ALARM

SCALE: 1/8"=1'-0"

(E) EXISTING DEVICES  
(N) NEW DEVICES



2 2ND FLOOR PLAN - FIRE ALARM

SCALE: 1/8"=1'-0"

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SHEET CONTENTS:

**FIRE ALARM PLAN  
FIRST AND SECOND FLOOR**

INSTALLATION TYPE

- NEW INSTALLATION
- DESIGN/BUILD
- PER CONTRACT DOCUMENT
- EXISTING BASE JOB # \_\_\_\_\_
- OTHERS: \_\_\_\_\_

SYSTEM SALES REP.:

Kelly Rogers

PROJECT MANAGER:

Mark Millard

DRAWN BY:

Adrian Oliveros

CAD FILENAME:

SCALE:

DATE DRAWN:

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OF

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