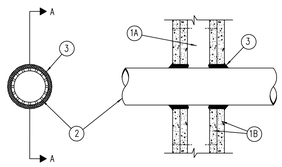
THROUGH-PENETRATION FIRE STOP SYSTEM DETAILS



SECTION A-A

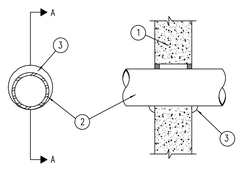
SYSTEM NO. W-L-1001

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 U300 OR U400 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 HR FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM. 2 BY 4 IN. LUMBER SPACED 16 IN. O.C. WITH NOM. 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3-5/8 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX 24 O.C.
   B. GYPSUM BOARD – NOM. 1/2 OR 5/8 IN. THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX. DIAM. OF OPENING IS 26 IN.
2. THROUGH PENETRANT – ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRE STOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN. 0 IN. (POINT CONTACT) TO MAX. 2 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
   A. STEEL PIPE – NOM. 24 IN. DIAM. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. CONDUIT – NOM. 6 IN. DIAM. (OR SMALLER) STEEL CONDUIT OR NOM. 4 IN. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
3. FILL, VOID OR CAVITY MATERIAL – CAULK OR SEALANT – MIN. 5/8, 1-1/4, 1-7/8 AND 2-1/2 IN. THICKNESS OF CAULK FOR 1, 2, 3 AND 4 HR. RATED ASSEMBLIES, RESPECTIVELY, APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN. 1/4 IN. DIAM BEAD OF CAULK APPLIED TO GYPSUM BOARD/PENETRANT INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL. THE HOURLY F RATING OF THE FIRE STOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRE STOP SYSTEM IS DEPENDENT UPON THE TYPE OF SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED AS TABULATED BELOW:

MAX PIPE OR CONDUIT DIAM, IN.	F RATING HR	T RATING HR
1	1 OR 2	0+, 1 OR 2
1	3 OR 4	3 OR 4
4	1 OR 2	0
6	3 OR 4	0
12	1 OR 2	0

3M COMPANY – CP 25WB+ OR FB-3000 WT.

1 PENETRATION TYPE 1



SECTION A-A

SYSTEM NO. W-J-1127

F RATING – 2 HR
T RATING – 1/4 HR

1. WALL ASSEMBLY – MIN. 6 IN. (152 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600 – 2400 KG/M3) CONCRETE WALL. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX DIAM OF OPENING IS 10-1/2 INCH (267MM) SEE CONCRETE BLOCK (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. THROUGH PENETRANT – ONE METALLIC PIPE, CONDUIT, TUBING OR OR FLEXIBLE METAL PIPE INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN OPENING. THE ANNULAR SPACE BETWEEN PENETRANT AND PERIPHERY OF OPENING TO BE MIN. 0 IN. (0 MM) (POINT CONTACT) TO MAX. 1-7/8 IN. (48 MM). PENETRANT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL. THE FOLLOWING TYPES AND SIZES OF PENETRANTS MAY BE USED:
   A. STEEL PIPE – NOM. 8 IN. (203 MM) DIAM (OR SMALLER) SCHEDULE 5 (OR HEAVIER) STEEL PIPE.
   B. IRON PIPE – NOM. 8 IN. DIAM. (203 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
   C. CONDUIT – NOM. 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR NOM. 6 IN. (152 MM) RIGID STEEL CONDUIT.
3. FILL, VOID OR CAVITY MATERIAL – CAULK – MIN. 5/8 IN. (16MM) THICKNESS OF CAULK APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN. 1/4 IN. (6 MM) DIAM BEAD OF CAULK APPLIED TO PENETRANT/WALL INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL.

3M COMPANY – IC 15WB OR CP 25WB+

2 PENETRATION TYPE 2

NOTE:

"Through Penetration Fire Stop System" details are for reference only. Penetrations through fire-rated floors and walls shall be protected in accordance with CBC Sections 709.6 and 710.2.

Systems shall be installed in accordance with manufacturer's installation instructions and approved listing. Manufacturer's installation instructions and approved listing shall be provided for review by inspection authorities.

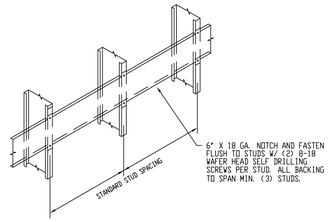
Substitutions of or revisions or additions to approved systems shall be submitted to the Inspector of Record and the OSHPD Fire Marshal for field review and approval.

MISCELLANEOUS DETAILS

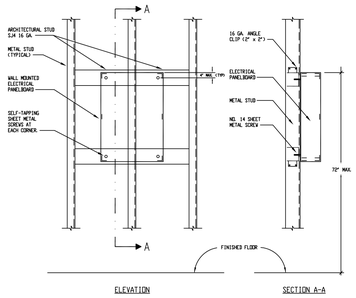
PANEL ANCHORAGE NOTE

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 OSHPD AS PART OF FIELD REVIEWS/INSPECTIONS. THE INSPECTOR OF RECORDS SHALL ASSURE THAT THE ABOVE REQUIREMENTS ARE ENFORCED.

THE PAD-2 POWER SUPPLY/NAC EXTENDER PANELS EACH WEIGH LESS THAN 20 LBS. INCLUDING BATTERIES.

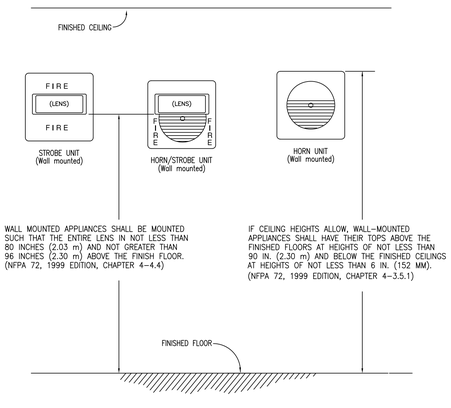


Metal Backing Gypsum Board Wall
For Panel Mounting

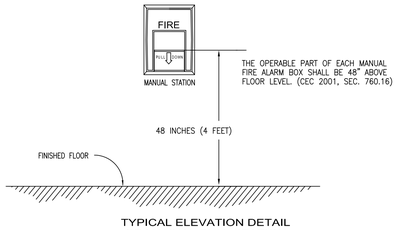


Panelboard Mounting Detail

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



TYPICAL ELEVATION DETAIL
OF AUDIBLE & VISUAL ALARM DEVICE



TYPICAL ELEVATION DETAIL
OF MANUAL PULL STATION

MXL WIRING SCHEDULE

SYMBOL	RECOMMENDED WIRE TYPE	USED ON
A	2-CONDUCTOR, #16 AWG SOLID TWISTED SHIELDED CABLE Cable Part Number: F1TSP16SRD-FPLR (CONDUIT) F1TSP16SRD-FPLP (PLENUM)	ADDRESSABLE ALARM INITIATING DEVICES: – FP-SERIES SMOKE DETECTORS – TRI-SERIES INTERFACE MODULES – AD-SERIES DUCT DETECTORS – MSI-SERIES PULL STATION
B	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
C	2-CONDUCTOR, #16 AWG SOLID TWISTED CABLE Cable Part Number: F1TP16SRD-FPLR (CONDUIT) F1TP16SRD-FPLP (PLENUM)	NOT USED VOICE AUDIO CIRCUIT: – SPEAKER CIRCUIT
D	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 24 VDC POWER TO: – FIRE ALARM PANELS – DOOR HOLDERS
F	2-CONDUCTOR, #16 AWG SOLID TWISTED SHIELDED CABLE Cable Part Number: F1TSP16SRD-FPLR (CONDUIT) F1TSP16SRD-FPLP (PLENUM)	NOT USED TELEPHONE CIRCUIT: – FIREFIGHTER'S TELEPHONE JACK – FIREFIGHTER'S REMOTE TELEPHONE STATION
G	2-CONDUCTOR, #16 AWG SOLID TWISTED CABLE Cable Part Number: F1TP16SRD-FPLR (CONDUIT) F1TP16SRD-FPLP (PLENUM)	MISCELLANEOUS FIELD DEVICES: – TRI to MONITORED DEVICES – WATERFLOW SWITCH / TAMPER SWITCH – DIGITAL DIALER to FACP – TSM-1 TEST SWITCH
M	2-CONDUCTOR, #16 AWG SOLID TWISTED SHIELDED CABLE Cable Part Number: F1TSP16SRD-FPLR (CONDUIT) F1TSP16SRD-FPLP (PLENUM)	NOT USED "M-NET" – MXL NETWORK WIRING: – MMB-2 / NET-7 / NET-4 (MMB-2 / PSR-1 / ANN / FIP / FDP)
X	2-CONDUCTOR, #16 AWG SOLID TWISTED SHIELDED UNDERGROUND CABLE Cable Part Number: 2AS-1602POS	NOT USED "X-NET" – GLOBAL NETWORK WIRING: – NIM-1W to NIM-1W (MXL / MXL-V / MXL-IQ)
P	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 – WHEELOCK PS-12/24-8MP EXTENDER PANEL
S	2-CONDUCTOR, #18 AWG SOLID, THHN	NOT USED WHEELOCK SYNC WIRING: – WHEELOCK DSM-12/24-R SYNC MODULE
	2-CONDUCTOR, #12 AWG SOLID, THHN	NOT USED 120 VAC POWER WIRING TO: – FIRE SMOKE DAMPERS – DOOR HOLDER / ROLL DOWN DOOR – AIR HANDLING UNIT
120 VAC	2-CONDUCTOR, #12 AWG SOLID, THHN (GROUNDED WIRE)	120 VAC POWER WIRING TO: – F.A. CONTROL PANELS – AMPLIFIER PANELS – POWER SUPPLY PANEL – FIRE ALARM PRINTERS

WIRING NOTE:

1. WIRING FOR NOTIFICATION APPLIANCE CIRCUIT IS CLASS B, STYLE Y.
2. WIRING FOR INITIATING DEVICES IS CLASS B, STYLE 3.
3. CONDUIT FILL < 40%, 3/4" CONDUIT.
4. LOCAL FIRE ALARM SYSTEM MONITORED BY A CENTRAL STATION.
5. SEE WIRING GUIDELINES FOR CABLE TYPE USE.

SIEMENS FIRE CABLE LEGEND

PART NUMBER LEGEND:

1TP = ONE TWISTED PAIR
1TSP = ONE TWISTED SHIELDED PAIR
2C = FOUR CONDUCTOR
2CS = FOUR CONDUCTOR SHIELDED
18SRD = 18 GAUGE SOLID CONDUCTOR, RED JACKET (S = SOLID/SINGLE WIRE)
22MRD = 22 GAUGE SOLID CONDUCTOR, RED JACKET (M = MULTI-STRAND (STRANDED))
FPLR/FPLP/CMR/CMP/ = TYPE OF WIRE

WIRE ORDERING INFORMATION:
CONTACT ANIXTER @ 1 888 479-3830 x 3711. STATE CABLE PRODUCT NUMBER, QUANTITY & GIVE REFERENCE OF "SIEMENS FIRE SAFETY, SAN FRANCISCO" TO INSURE DISCOUNTED RATE IS APPLIED.

EXISTING SEQUENCE OF OPERATION MATRIX
GENERAL ALARM for LOW RISE BUILDING

NOTE:
BLANK MEANS NOT APPLICABLE
R = REQUIRED ACTION

	FACP ALARM	FACP TROUBLE	FACP SUPERVISORY	ANNUNCIATE FIRE ALARM VIA RCC-1F REMOTE COMMAND CENTER	ANNUNCIATE TROUBLE VIA RCC-1F REMOTE COMMAND CENTER	ANNUNCIATE SUPERVISORY VIA RCC-1F REMOTE COMMAND CENTER	ACTIVATE AUDIO/VISUAL THROUGHOUT THE BLDG.	TRANSMIT SIGNAL TO CENTRAL STATION	ACTIVATE CAPABILITY DURING ABNORMAL CONDITIONS
MANUAL PULL STATION	X			X			X	X	
AREA SMOKE DETECTOR	X			X			X	X	
AREA HEAT DETECTOR	X			X			X	X	
WATERFLOW SWITCH	X			X			X	X	
VALVE TAMPER			X			X		X	
LOSS OF AC POWER			X			X		X	
INITIATING CKT STYLE C (CLASS B)								X	
OPEN WIRE		X			X			X	
GROUNDED WIRE		X			X			X	R
SHORTED WIRES		X			X			X	
LOSS OF CARRIER		X			X			X	
NOTIFICATION CKT STYLE Y (CLASS B)								X	
OPEN WIRE		X			X			X	
GROUNDED WIRE		X			X			X	R
SHORTED WIRES		X			X			X	
SIGNALING LINE CKT STYLE 3 (CLASS B)								X	
OPEN WIRE		X			X			X	
GROUNDED WIRE		X			X			X	R
WIRE TO WIRE SHORT & OPEN		X			X			X	
WIRE TO WIRE SHORT & GROUND		X			X			X	
OPEN & GROUND		X			X			X	
LOSS OF CARRIER		X			X			X	

NOTE: BLANK MEANS NOT APPLICABLE R = REQUIRED ACTION

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 CEILINGS 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. – SPEAKER/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.

DEVICE DESIGNATION LEGEND

INITIATING DEVICES

S 1 – 7
- DEVICE REFERENCE NUMBER
- INITIATING ALD LOOP DESIGNATION
- DEVICE SYMBOL (SMOKE DETECTOR)

HORN/STROBES CIRCUITS

EXAMPLES: F A1-1
- DEVICE REFERENCE NUMBER
- HORN/STROBE CIRCUIT DESIGNATION
- DEVICE SYMBOL (HORN/STROBE)

NOTE: HIGHLIGHTED ITEMS APPLY TO NEW SCOPE OF WORK and FADED ITEMS ARE EXISTING SHOWN FOR REFERENCE ONLY.

THE DRAWING AND DESIGN HEREIN SHALL NOT BE DUPLICATED, USED OR DISCLOSED TO 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.

KEY PLAN

C10 STAMP:

DESIGNED BY:
INTEGRATED DESIGN ASSOCIATES INC
...design facilities
CONSULTING ELECTRICAL ENGINEERS
3140 De La Cruz Boulevard, Suite 110
Santa Clara, California 95054
tel: (408) 562-3560, fax: (408) 562-3561

CONTRACTOR'S NAME & ADDRESS:
CUPERTINO ELECTRIC
1132 N. Seventh Street
San Jose, CA 95112
TEL (408) 808-8135
FAX (408) 279-4605
California State C10 License No. 174637

PRODUCT MANUFACTURER:
SIEMENS
Building Technologies, Inc.
Fire Safety Division
SAN FRANCISCO BRANCH
25821 Industrial Boulevard, Suite 300
Hayward, California 94545-2991
Tel (510) 783-6000 Fax (510) 293-2100
California State C10 License No. 758796
U.L. Certificate ID No. 324787-001

JOB NAME & LOCATION (STREET ADDRESS)

CANADA COLLEGE
4200 FARM HILL BLVD.
REDWOOD CITY, CA 94061

ATHLETIC FIELD PROJECT
MODULAR BUILDINGS

SHEET CONTENTS:
MISCELLANEOUS FIRE ALARM DETAILS

INSTALLATION TYPE
☒ NEW INSTALLATION
☐ DESIGN/BUILD
☒ PER CONTRACT DOCUMENT
☐ EXISTING BASE JOB # _____
☐ OTHERS _____

SYSTEM SALES REP.:	K. Rogers
PROJECT MANAGER:	K. Kudlik
DRAWN BY:	L.B.Terrado
CAD FILENAME:	02-MISC.dwg
SCALE:	NONE
DATE DRAWN:	September 30, 2005
ISSUE DATE:	September 29, 2005
SHEET	2
OF	6
JOB NUMBER	10-9084

IF DRAWING IS SMALLER THAN 30" X 42" IT IS A REDUCED COPY