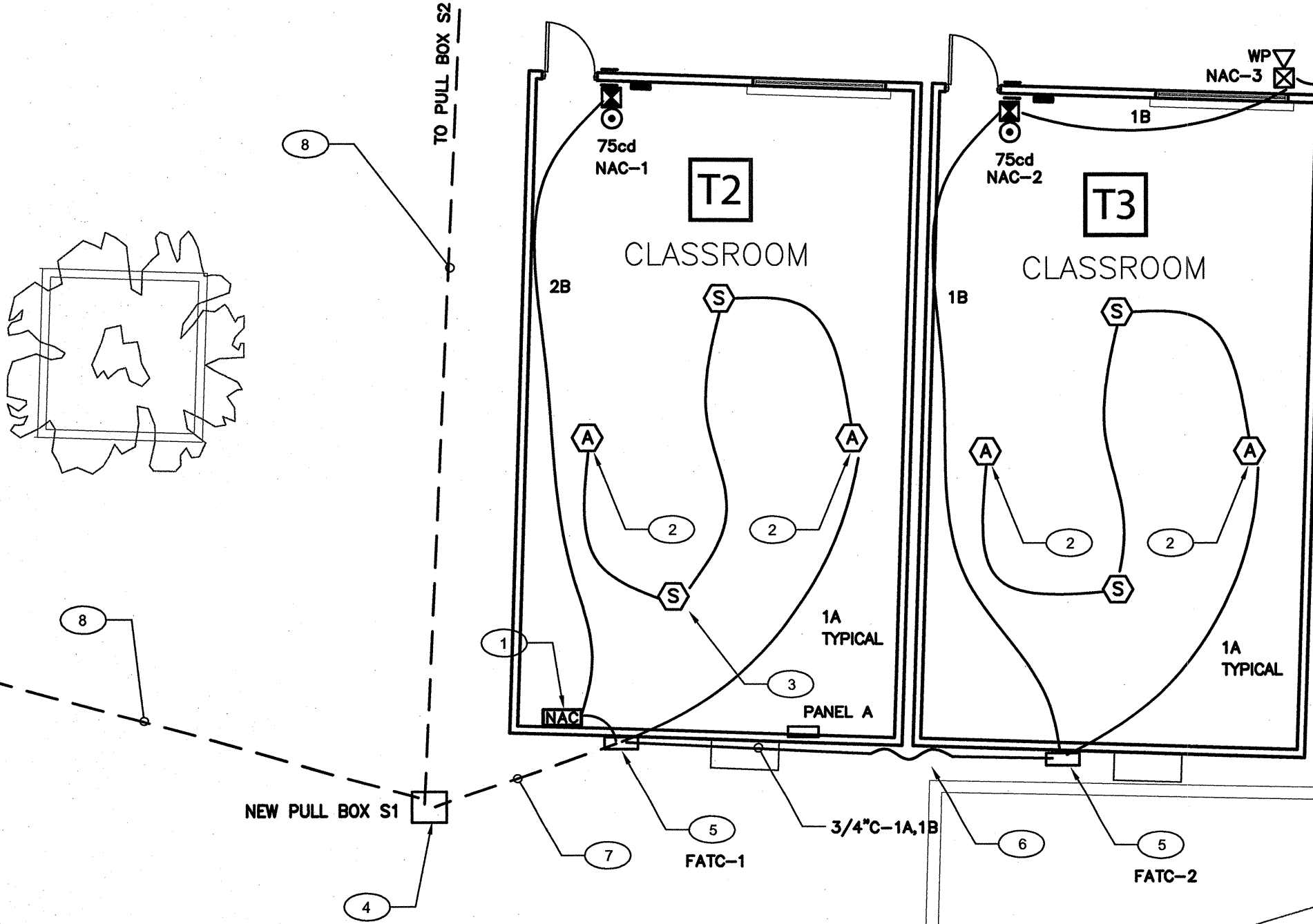
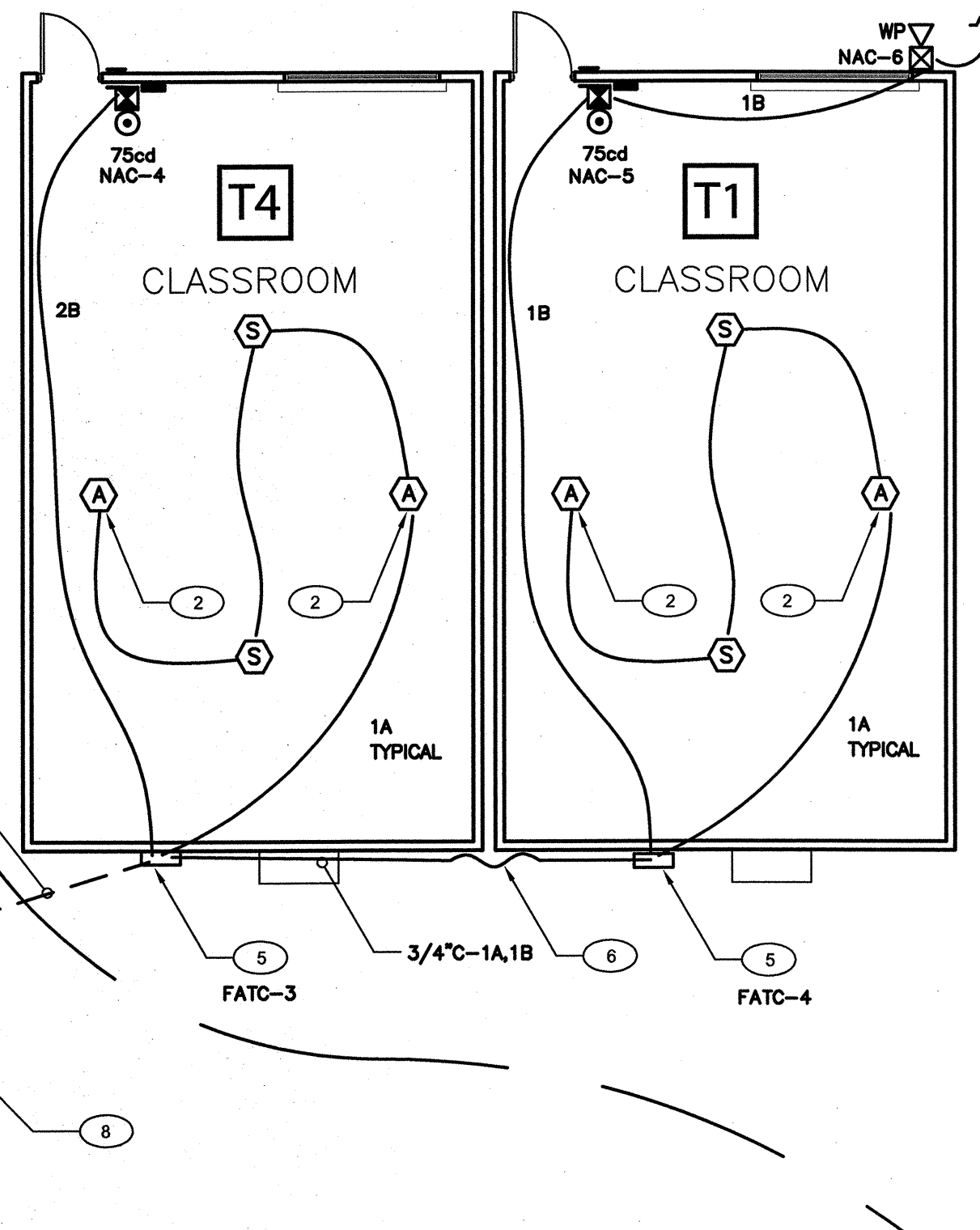


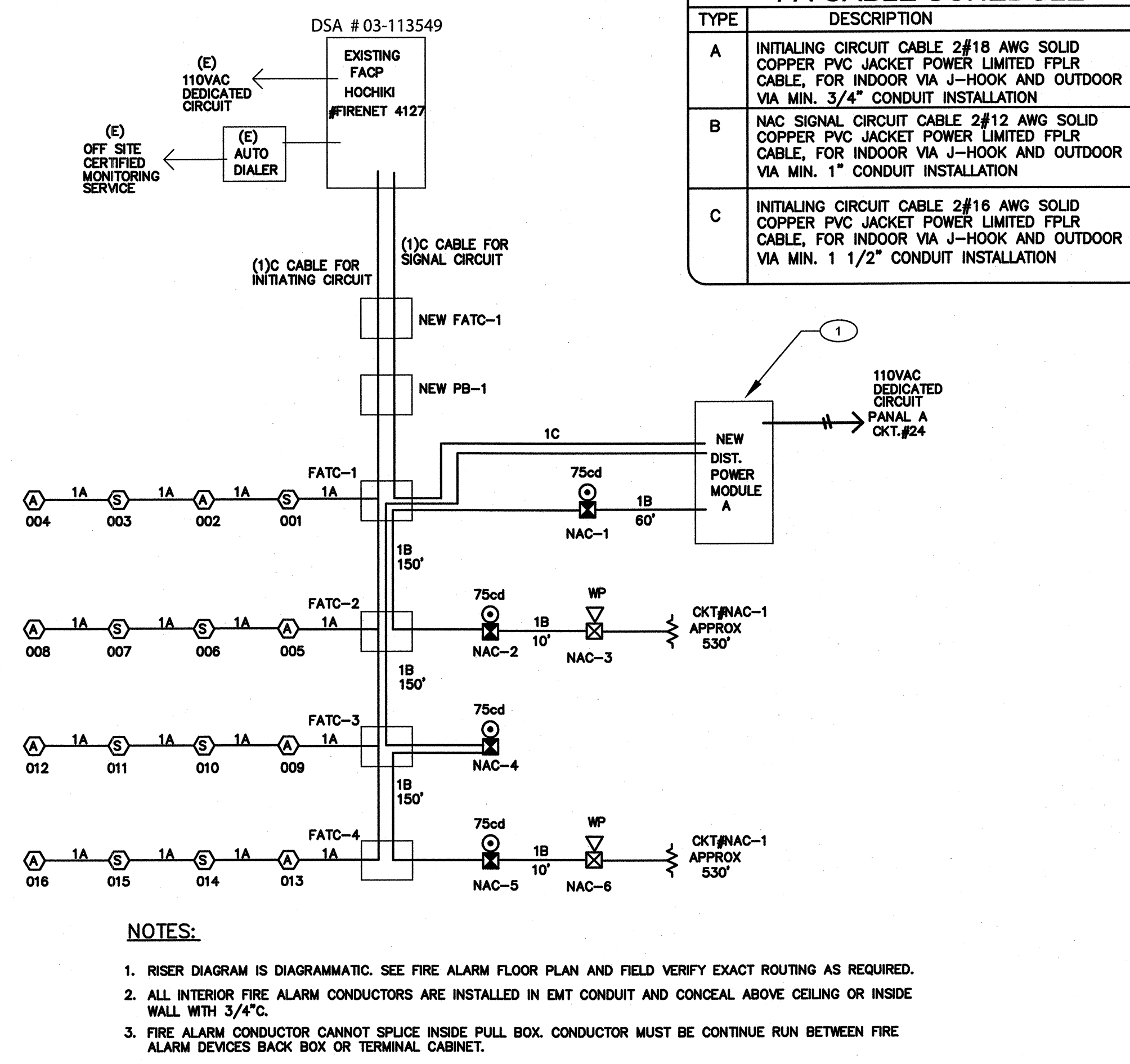
FIRE ALARM PLAN

4 RELOCATABLE CLASSROOMS

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



1 FIRE ALARM RISER DIAGRAM

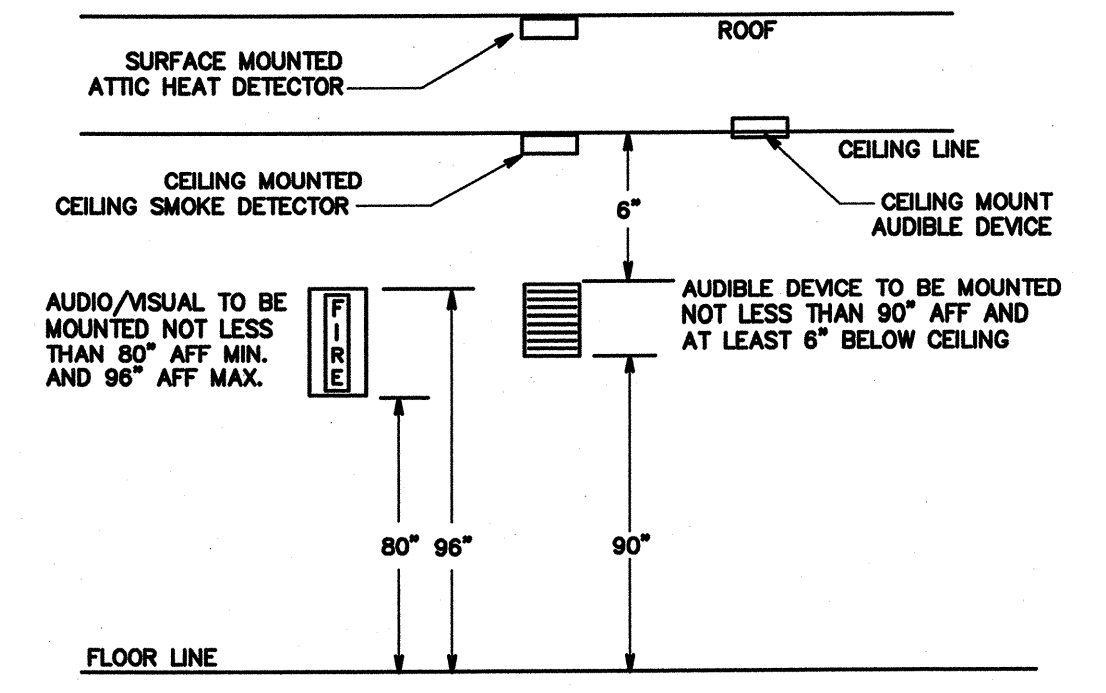


- NOTES:
1. RISER DIAGRAM IS DIAGRAMMATIC. SEE FIRE ALARM FLOOR PLAN AND FIELD VERIFY EXACT ROUTING AS REQUIRED.
 2. ALL INTERIOR FIRE ALARM CONDUCTORS ARE INSTALLED IN EMT CONDUIT AND CONCEAL ABOVE CEILING OR INSIDE WALL WITH 3/4" C.
 3. FIRE ALARM CONDUCTOR CANNOT SPLICE INSIDE PULL BOX. CONDUCTOR MUST BE CONTINUE RUN BETWEEN FIRE ALARM DEVICES BACK BOX OR TERMINAL CABINET.

N.T.S.

FIRE ALARM SYMBOLS AND SCHEDULE

ITEM	DESCRIPTION	MODEL NUMBER	CSFM NUMBER	MOUNT	BACK BOX
—	DISTRIBUTED POWER MODULE SIGNAL EXPENDER	SILENT KNIGHT #5459	7300-0559:123	+60"	EQUIPMENT CABINET
⊙	HORN STROBE	WHEELLOCK #AS-24MCW-FR	7125-0785:131	+80"	4"SQ X 2 1/2"D
⊙	OUTDOOR HORN	WHEELLOCK #AAH-24WP	7125-0785:131	+80"	4"SQ X 2 1/2"D
S	ADDRESSABLE CEILING SMOKE DETECTOR WITH BASE	HOCHIKI #ALK-V/YBN-NSA-4	7272-0410:173	CEILING	4"SQ X 2 1/2"D
A	ATTIC HEAT DETECTOR 190°F TEMP WITH BASE AND MONITOR MODULE	HOCHIKI #DFE 190/HSC-XXL #FRMC-4	7272-0410:119 7300-0410:150	ATTIC	4"SQ X 2 1/2"D
~	END OF LINE RESISTOR	N/A	N/A	LAST DEVICE	4"SQ X 2 1/2"D



2 TYPICAL FIRE ALARM DEVICES MT'D DETAIL

N.T.S.

FA CABLE SCHEDULE

TYPE	DESCRIPTION
A	INITIALING CIRCUIT CABLE 2#18 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE, FOR INDOOR VIA J-HOOK AND OUTDOOR VIA MIN. 3/4" CONDUIT INSTALLATION
B	NAC SIGNAL CIRCUIT CABLE 2#12 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE, FOR INDOOR VIA J-HOOK AND OUTDOOR VIA MIN. 1" CONDUIT INSTALLATION
C	INITIALING CIRCUIT CABLE 2#16 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE, FOR INDOOR VIA J-HOOK AND OUTDOOR VIA MIN. 1 1/2" CONDUIT INSTALLATION

BATTERY POWER CALCULATIONS

NEW DISTRIBUTED POWER MODULE A

DEVICE	NO. OF DEVICES	CURRENT PER DEVICE	ALARM CURRENT	STANDBY CURRENT	ALARM CURRENT
UNIT	1	0.075A	0.175A	0.075A	0.175A
OUTDOOR HORN	2	---	0.050A	---	0.100A
MINI HORN	0	---	0.025A	---	0.000A
VISUAL 15cd	0	---	0.041A	---	0.000A
AUDIO/VISUAL 15cd	0	---	0.093A	---	0.000A
AUDIO/VISUAL 30cd	0	---	0.114A	---	0.000A
AUDIO/VISUAL 75cd	4	---	0.157A	---	0.628A
AUDIO/VISUAL 110cd	0	---	0.197A	---	0.000A
SYNC MODULES	0	---	0.035A	---	0.000A
SUB-TOTAL					0.903A
24 HOUR STANDBY CURRENT					1.800AH
5 MINUTE ALARM CURRENT (0.083 HR)					0.075AH
SUBTOTAL					1.875AH
10% SAFETY FACTOR					0.182AH
TOTAL AMPS-HRS REQUIRED					2.057AH
PROVIDE BATTERY WITH (2) NEW 6AH BATTERY					

DURING THE FINAL TESTING, MEASURE EXACT STANDBY AND ALARM CURRENT, VOLTAGE DROP FOR EACH SIGNAL CIRCUIT. SEND OWNER AND ENGINEER ONE COPY RECORD FOR REVIEW, AND PLASTIC LAMINATED ONE COPY INSIDE CABINET DOOR.

FA SEQUENCE OF OPERATIONS

	NEW AND EXISTING SMOKE DETECTORS	NEW AND EXISTING HEAT DETECTORS	SUPERVISORY PANEL FAILURE	EXISTING PULL STATION	EXISTING SMOKE DETECTOR	(E) FIRE SPRINKLER FLOW AND TAMPER SWITCHES
AUDIO VISUAL DEVICE	X	X		X	X	X
OFF-SITE MONITORING CERTIFY AGENCY	X	X		X	X	X
CONTROL PANEL	X	X	X	X	X	X
REMOTE ANNUNCIATOR	X	X	X	X	X	X
HVAC SHUT DOWN					X	X

VOLTAGE DROP CALCULATION

WORST CASE VOLTAGE DROP AT THE LAST DEVICE

VD = VOLTAGE DROP
I = TOTAL LOAD
L = 21.6
CM = DISTANCE TO THE LOAD
V = VOLTAGE (24vdc)
VD = K * I * L * CM

SIGNAL CKT NO.	AMPERES	APPROX LENGTH	RESISTIVITY CM	WIRE AWG	AREA CM	VOLTS DROPPED	% VOLTS DROP
CKT. NAC-1	0.414A	200'	21.6	12	6530	0.274V	1.1%
CKT. NAC-1	0.414A	400'	21.6	12	6530	0.548V	2.2%

SIGNAL CIRCUIT LOAD SUMMARY

DEVI	NO	VD	CM	RES	WIRE	AREA	VOLTS	%
CKT. NAC-1	1	0	0	2	0	0	0.414A	
CKT. NAC-1	1	0	0	2	0	0	0.414A	

SHEET NOTES

1. PROVIDE NEW FIRE ALARM DISTRIBUTED POWER MODULE NAC SIGNAL EXPENDER AND CONNECT TO (E) FACP PER RISER DIAGRAM. PROVIDE 110V DEDICATED CIRCUIT AND CONNECTION FROM PANEL E CIRCUIT NO. 24 WITH MECHANICAL LOCK ON BREAKER. PROVIDE FIRE ZONE MAP INFORMATION, MEASURE ACTUAL LOAD CURRENT AND VOLTAGE DROP FOR EACH NAC SIGNAL CIRCUIT, AND STANDBY CURRENT AND ALARM CURRENT. SEND THE REPORT TO OWNER AND ENGINEER FOR REVIEW, AND PLASTIC LAMINATED ONE COPY INSIDE CABINET DOOR. SEE FA RISER DIAGRAM FOR DETAIL.
2. LOCATE HEAT DETECTOR IN ATTIC AND SURFACE MOUNT ON THE BOTTOM OF RAFTER DETECTOR COVER WILL BE DETACHED SOE ABOVE THE RAFTER. FIELD VERIFY LOCATION WITH GENERAL CONTRACTOR AND PROVIDE ATTIC HEAT DETECTOR IN EACH BAY OF STRUCTURAL.
3. LOCATE CEILING SMOKE DETECTOR 5 FEET FROM NEW NAC SIGNAL EXPANDER PANEL. FIELD VERIFY LOCATION.
4. PROVIDE NEW CHRYSTI 140 SIGNAL PULL BOX, AND NEW UNDERGROUND CONDUITS AND WIRING, SEE SIGNAL RISER DIAGRAMS.
5. PROVIDE NEMAR 6"X6"X4" NEMAR TO SURFACE MOUNTED ON EXTERIOR WALL AT +24" AFF WITH 1" STUB INTO BUILDING CEILING CAVITY WITH LB FITTING. PROVIDE TERMINAL STRIP INSIDE TO FOR CONDUCTOR TERMINATION. NO WIRE NUTS ALLOWED. CORE DRILL AND SEAL EXTERIOR WALL AS REQUIRED.
6. PROVIDED 3/4" WEATHERPROOF FLEX CONDUIT BETWEEN BUILDING.
7. SAW CUT AND PATCH EXISTING FLOOR TO INSTALL NEW UNDERGROUND 1 1/2".
8. SAW CUT AND PATCH EXISTING FLOOR TO INSTALL (2)2" FOR SIGNAL SYSTEM AND (1) 1 1/2" FOR FA RISER PLAN.
9. 24"X24"X8" NEMAR NEW PULL DOWN SURFACE MOUNTED ON EXTERIOR WALL AT +24" AFF. INSTALL NEW CONDUITS AND WIRING PER SINGLE LINE DIAGRAMS. PROVIDE FIBER OPTIC CABLE SPICE PANEL, 50 PAIR PUNCH DOWN BLOCK, FA TERMINAL STRIP AND DIVIDER INSIDE TO.
10. NEW (2)2" EMT CONDUIT RACEWAY ON EXTERIOR WALL FOR EXISTING AERIAL SIGNAL CABLE RUN PULL. PROVIDE UNISTRUT FOR MOUNTING.
11. INTERCEPT EXISTING AERIAL SIGNAL CABLE RISER AND INSTALL SIGNAL TC WITH NEW CONDUITS RACEWAY PER PLANS. FIELD VERIFY LOCATION. PROVIDE UNISTRUT FOR SUPPORT.

F.A SYSTEM SCOPE OF WORK

1. PROVIDE AUTOMATIC FIRE ALARM SYSTEM FOR THE ADDITIONAL NEW CLASSROOM BUILDINGS PER PLANS.
2. EXISTING FACP IS 24VDC ADDRESSABLE, AND CLASS B WIRING SYSTEM, AND WITH OFF SITE MONITORING SERVICE VIA AUTO DIAL LINE DIALER AND TELEPHONE LINES.
3. DURING THE FINAL TESTING, MEASURE ALL FIRE ALARM CURRENTS, VOLTAGE DROP FOR EACH SIGNAL CIRCUIT. SEND OWNER AND ENGINEER ONE COPY RECORD FOR REVIEW, AND PLASTIC LAMINATED ONE COPY INSIDE CABINET DOOR.
4. COMPLETE FIRE ALARM DRAWING SUBMITTAL IS PROVIDED.

FIRE ALARM NOTES

1. THE SYSTEMS SHALL CONFORM TO CALIFORNIA ELECTRICAL CODES ARTICLE 760, CALIFORNIA FIRE CODE ARTICLE 10 AND CALIFORNIA BUILDING CODE, SECTION 305.9.
2. FIRE ALARM CIRCUITS SHALL BE RUN IN EMT CONDUIT PER SPECIFICATIONS.
3. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE ENFORCING AGENCY.
4. NO SPLICE SHALL BE PERMITTED IN PULLBOXES. ALL WIRE SHALL BE RUN CONTINUOUSLY BETWEEN TERMINAL CABINETS.
5. ALL PENETRATIONS IN FIRE-RATED ASSEMBLIES SHALL BE SEALED IN COMPLIANCE WITH CHAPTER 7, C.B.C.
6. AUDIBLE SIGNALS INTENDED FOR OPERATION IN THE PRIVATE MODE SHALL HAVE A SOUND LEVEL OF NOT LESS THAN 45 dBA AT 10 FT OR MORE THAN 130dBA AT THE MINIMUM HEARING DISTANCE FROM THE AUDIBLE APPLIANCE. AN AVERAGE SOUND LEVEL GREATER THAN 115 dBA REQUIRES THE USE OF A VISIBLE SIGNAL APPLIANCE. IF AUDIBILITY LEVEL DOES NOT MEET THE REQUIREMENT AT THE TIME OF TESTING, NEW AUDIBLES AND REVISED PLANS WILL BE REQUIRED.
7. NEW FIRE ALARM AUDIBLES SHALL BE TAMPO CODE 3.
8. A CERTIFICATE OF COMPLETION SHALL BE PROVIDED TO THE OWNER PER NFPA 72 AND THE CALIFORNIA FIRE CODE.
9. AN APPROVED FIRE ALARM SYSTEM SHALL BE INSTALLED AS SET FORTH IN THE CALIFORNIA FIRE CODE IN GROUP, DIVISION 1, 2, AND 2.1 OCCUPANCIES. (303.9, CBC)
10. THE ALARM SYSTEM SHALL BE INSTALLED, TESTED, AND MAINTAINED IN ACCORDANCE WITH THE STATE FIRE MARSHAL'S REGULATIONS (NFPA 72, 1999 EDITION)
11. THE FIRE ALARM SYSTEM SHALL CONFORM TO CALIFORNIA ELECTRICAL CODE AND ARTICLE 91. INSTALLATION OF THE SYSTEM SHALL NOT BEGIN UNTIL DETAILED PLANS AND SPECIFICATIONS, INCLUDING SFM LISTING NUMBERS FOR EACH COMPONENT HAVE BEEN APPROVED BY DSA. UPON COMPLETION OF THE INSTALLATION, A TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE INSPECTOR OF RECORD.
12. ALARM INDICATING DEVICES OF A FIRE ALARM SYSTEM INTENDED TO ALERT ALL OCCUPANTS SHALL CAUSE A LEVEL OF AUDIBILITY OF NOT LESS THAN 15 dBA ABOVE THE AVERAGE AMBIENT NOISE MEASURE @ 10' BUT/NOT LESS THAN 10dBA IN TOTAL THROUGHOUT. AMBIENT NOISE LEVELS MEANS THE LEVEL WHICH CAN NORMALLY BE EXPECTED WHEN THE FACILITY, BUILDING, ROOM OR AREA IS FUNCTIONING UNDER NORMAL OPERATING OR WORKING CONDITIONS.
13. THE ALARMS SYSTEM SHALL ACTIVATE A MEANS OF WARNING THE HEARING IMPAIRED. FLASHING VISUAL WARNINGS SHALL HAVE A FLASH RATE NOT EXCEEDING TWO FLASHES PER SECOND (2 HZ) NOR BE LESS THAN ONE FLASH EVERY SECOND (1 HZ). STROBE SIGNALING DEVICES FOR THE HEARING IMPAIRED SHALL BE STATE FIRE MARSHAL APPROVED AND LISTED.

F.A. MONITORING NOTES

1. THE AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AND AMENDED EITHER UJFF OR UJUS BY UNDERWRITERS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BY ARRANGED BY OWNER.

SEISMIC ANCHORAGE

1. TO COMPLY WITH 2001 CBC, TITLE 24, SECTION #1632A.
2. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ELECTRICAL ENGINEER AND THE FIELD ENGINEER OF THE DIVISION OF THE STATE ARCHITECT.

COMPLETE AUTOMATIC FIRE ALARM PLAN SUBMITTAL

1. THE FIRE ALARM SYSTEM SHOWN ON THESE PLANS HAS BEEN SUBMITTED AND APPROVED BY DIVISION OF THE STATE ARCHITECT. ANY SUBSTITUTION OF THE FIRE ALARM SYSTEM SHALL BE RESUBMITTED TO THE ARCHITECT FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL PAY ANY ADDITIONAL FEES THAT ARE INCURRED DUE TO THIS SUBSTITUTION.
2. THE AUTOMATIC FIRE ALARM SYSTEM SHALL COVER ALL ROOMS AND AREAS AND UPON ACTIVATION OF AN INITIATING DEVICE ALERT ALL OCCUPANTS AND TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION. (EXCEPTION: SMOKE DETECTORS ARE NOT REQUIRED IN NON-ACCESSIBLE AREAS AS DEFINED IN EMERGENCY EXPRESS TERMS OF PROPOSED S.F.M. AMENDMENTS TO 2007 C.F.C. SECTION 210 (C.F.C. SECTIONS 1006.2.4.2.2.1.1 AND 1006.2.4.2.2.1.5)

Ownership of Documents
This document, the ideas and designs incorporated herein, as an instrument of Professional Service is the property of Integrated Designs by SOMAM Inc. and is not to be used, in whole or in part for any other project without written authorization. © COPYRIGHT 2013

integrated designs by SOMAM, Inc.
ARCHITECTURE - INTERIOR DESIGN - CONSTRUCTION MANAGEMENT
6011 N. Fresno St., Suite 130 - Fresno, California 93710
Phone (559) 439-6681 Fax (559) 439-0887 E-Mail: design@somam.com
www.integrateddesigns.com

Project Name & Address:
**PIONEER ELEMENTARY
4 RELOCATABLE CLASSROOMS**
BAKERSFIELD CITY SCHOOL DISTRICT
4404 PIONEER DR., BAKERSFIELD, CA

Rev. No.:
Rev. Date:
Revision Description:

FIRE ALARM PLAN

Issue Date: 06/00/13
Date: 06/02/13
Designer: J. CHONG
DR: J. CHONG
PC: C.M

Agency Approval Stamp:
FILE # 15-6
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
03-115335
AC, MC, FS, TC, SS, ED
DATE: JUN 08 2014
TRACKING #: 63321-131

CONSULTING ENGINEERS
John Chong ENGINEERING
2021 E. DECATUR AVE. FRESNO CA 93710
(559) 215-2266 • FAX 251-3401
jchong1neer@aol.com

REGISTERED PROFESSIONAL ENGINEER
JOHN S. CHONG
E 14419
Exp. 6/30/2014
ELECTRICAL

Job No.: **5082**
Sheet No.: **E-3**