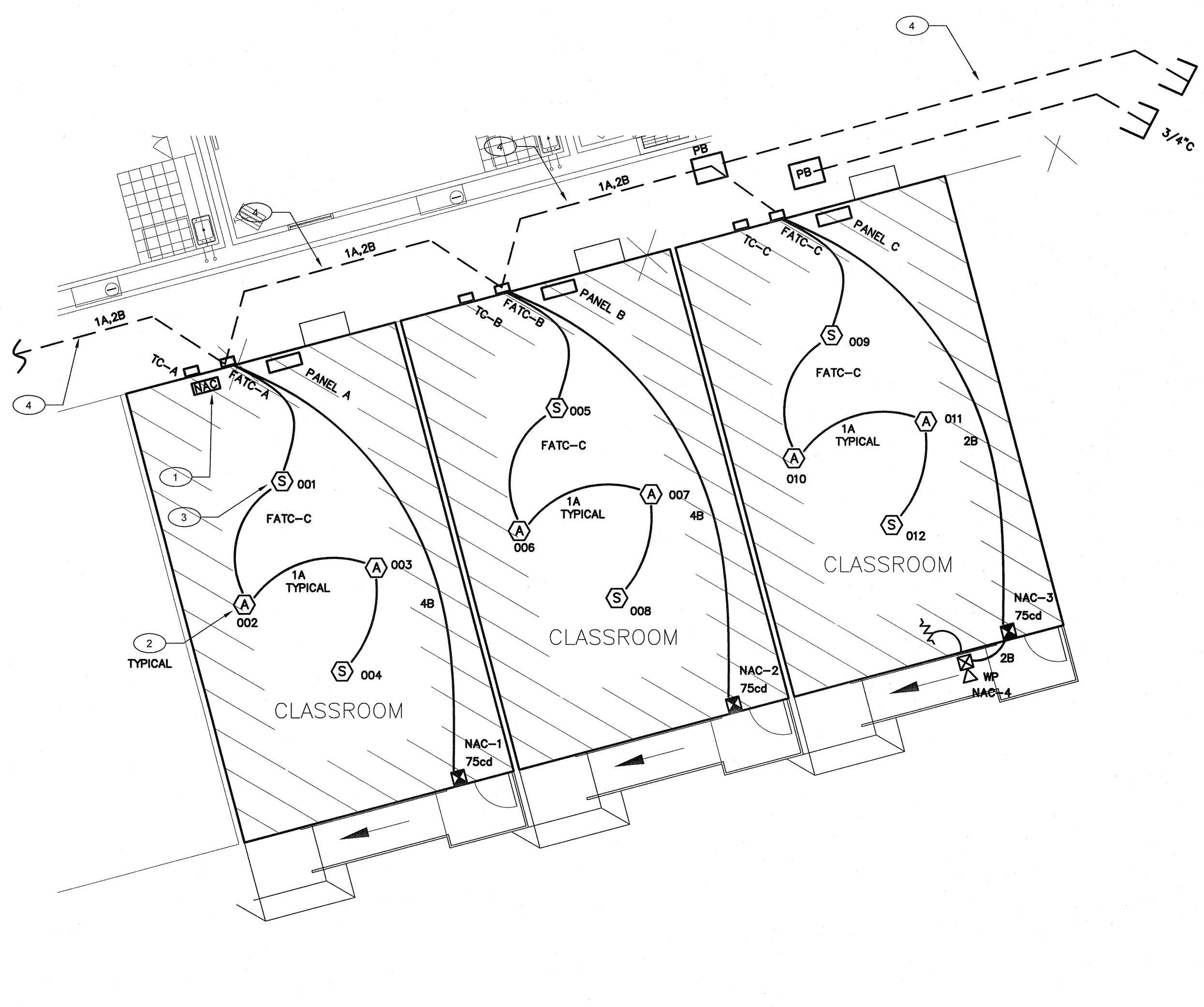


1" = 40'-0"
 1" = 30'-0"
 1" = 20'-0"
 1/8" = 1'-0"
 1/4" = 1'-0"
 1/8" = 1'-0"
 1/4" = 1'-0"

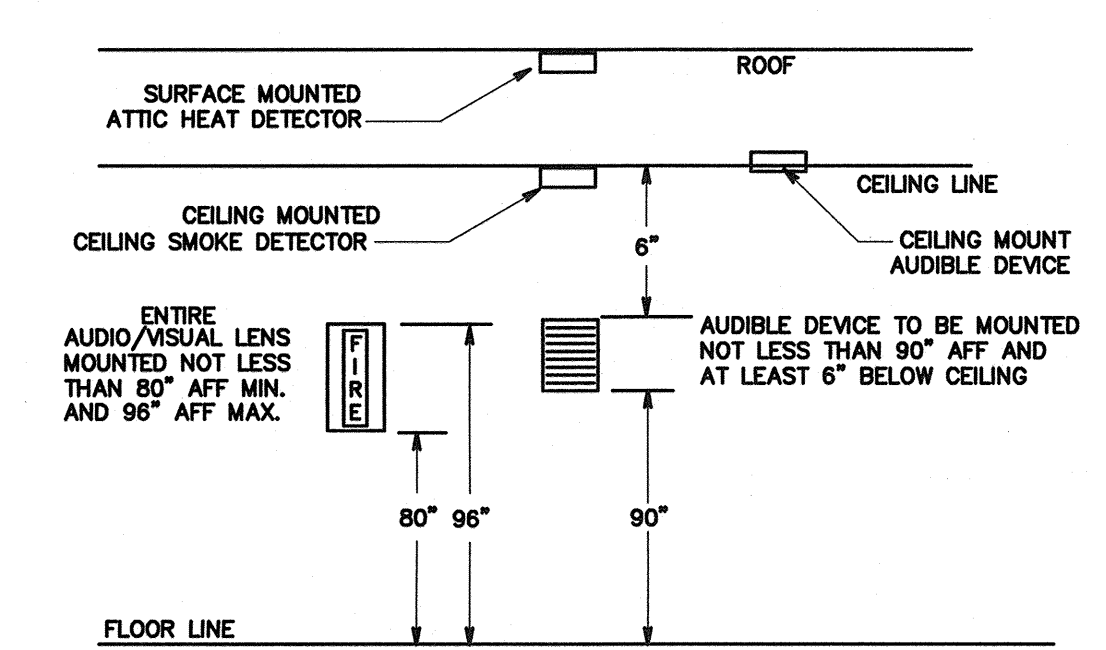


FIRE ALARM PLAN

3 RELOCATABLE CLASSROOMS

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

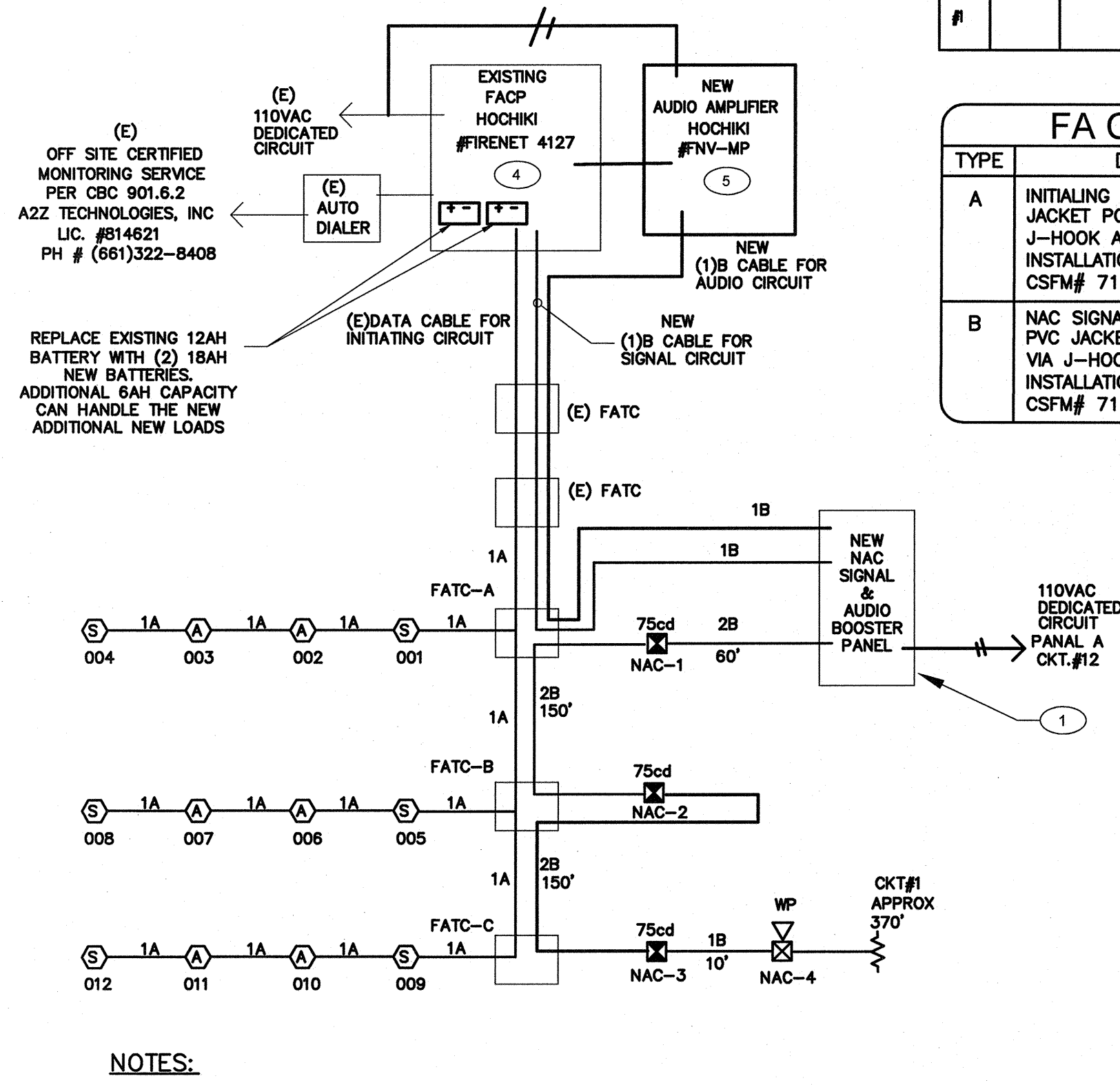
ITEM	DESCRIPTION	MODEL NUMBER	CSFM NUMBER	MOUNT	BACK BOX
EXISTING FACP (FOR REFERENCE ONLY)	HOCHIKI #FIRENET 4127	7165-0410:0159	+60"	EQUIPMENT CABINET	
VOICE EVACUATION PANEL	HOCHIKI #FNV-MP	6911-0410:0175	+60"	EQUIPMENT CABINET	
NAC SIGNAL & VOICE VAC BOOSTER PANEL SIGNAL EXPANDER	WHEELOCK #SPB 80/4	6911-0785:0157	+60"	EQUIPMENT CABINET	
SPEAKER STROBE	HOCHIKI #HSSPKMLP	7320-0410:0195	+80"	4"SQ X 2 1/2"D	
OUTDOOR HORN	HOCHIKI #WHE 24WR #TGOE	7135-0410:0187 7300-0410:0189	+80"	4"SQ X 2 1/2"D	
ADDRESSABLE CEILING SMOKE DETECTOR WITH BASE	HOCHIKI #ALK-V /YN-NSA-4	7272-0410:0173	CEILING	4"SQ X 2 1/2"D	
ATTIC HEAT DETECTOR 180°F TEMP WITH BASE AND MONITOR MODULE	HOCHIKI #DFE 190/HSC-XXXL #FRMC-4	7270-0410:0119 7300-0410:0150	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.

FIRE ALARM SEQUENCE OF OPERATIONS

MANUAL PULL STATION	SMOKE DETECTORS	HEAT DETECTORS	DUCT DETECTOR	POST INDICATOR VALVE	WIRING CONDITIONS	LOSS OF 120VAC POWER	RESET FACP
ALL (EXCEPT LISTED BELOW)	ALL (EXCEPT LISTED BELOW)	ALL (EXCEPT LISTED BELOW)	FIRE SPRINKLER WATERFLOW SWITCH	SIGNALING LINE CIRCUIT (SLC)-	WIRE-TO-WIRE SHORT	SINGLE OPEN	RESET FACP
PRIMARY FLOOR LOBBY	PRIMARY FLOOR LOBBY	ELEVATOR MACHINE ROOM	FIRE SPRINKLER WATERFLOW SWITCH	WIRE-TO-WIRE SHORT	WIRE-TO-WIRE SHORT	SINGLE OPEN	RESET FACP
ELEVATOR MACHINE ROOM	ELEVATOR MACHINE ROOM	ELEVATOR SHAF	FIRE SPRINKLER WATERFLOW SWITCH	SINGLE OPEN	SINGLE OPEN	SINGLE GROUND	RESET FACP
ELEVATOR SHAF	ELEVATOR SHAF	ELEVATOR SHAF	FIRE SPRINKLER WATERFLOW SWITCH	WIRE-TO-WIRE SHORT	WIRE-TO-WIRE SHORT	SINGLE GROUND	RESET FACP
CLASSROOM	CLASSROOM	CLASSROOM	FIRE SPRINKLER WATERFLOW SWITCH	SINGLE OPEN	SINGLE OPEN	SINGLE GROUND	RESET FACP
CLASSROOM	CLASSROOM	CLASSROOM	FIRE SPRINKLER WATERFLOW SWITCH	WIRE-TO-WIRE SHORT	WIRE-TO-WIRE SHORT	SINGLE GROUND	RESET FACP
CLASSROOM	CLASSROOM	CLASSROOM	FIRE SPRINKLER WATERFLOW SWITCH	SINGLE OPEN	SINGLE OPEN	SINGLE GROUND	RESET FACP
CLASSROOM	CLASSROOM	CLASSROOM	FIRE SPRINKLER WATERFLOW SWITCH	WIRE-TO-WIRE SHORT	WIRE-TO-WIRE SHORT	SINGLE GROUND	RESET FACP
CLASSROOM	CLASSROOM	CLASSROOM	FIRE SPRINKLER WATERFLOW SWITCH	SINGLE OPEN	SINGLE OPEN	SINGLE GROUND	RESET FACP



1 FIRE ALARM RISER DIAGRAM
N.T.S.

BATTERY POWER CALCULATIONS

NEW NAC SIGNAL & AUDIO BOOSTER PANEL

DEVICE	NO. OF DEVICE	CURRENT PER DEVICE	STANDBY CURRENT	ALARM CURRENT
UNIT	1	0.120A	9A	0.120A
OUTDOOR HORN	1	0.050A	---	0.050A
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	3	0.157A	---	0.471A
AUDIO/VISUAL 110cd	0	0.197A	---	0.000A
SYNC MODULES	0	0.035A	---	0.000A
1/4 W SPEAKER	3	0.010A	---	0.030A
SUB-TOTAL			0.120A	9.551A

24 HOUR STANDBY CURRENT 2.880AH
 5 MINUTE ALARM CURRENT (0.083 HR) 0.783AH
 SUBTOTAL 3.673AH

20X SAFETY FACTOR 0.735AH
 TOTAL AMPS-HRS REQUIRED 4.408AH

PROVIDE BATTERY WITH (2) NEW 6AH BATTERY

BATTERY POWER CALCULATIONS

NEW INITIATING DEVICES SUMMARY

DEVICE	NO. OF DEVICE	CURRENT PER DEVICE	STANDBY CURRENT	LED CURRENT
SMOKE DETECTOR	4	0.0003A	0.0065A	0.0012A
HEAT DETECTOR	4	0.0003A	0.0065A	0.0012A
SUB-TOTAL			0.0028A	0.052A

24 HOUR STANDBY CURRENT 0.067AH
 5 MINUTE LED CURRENT (0.083 HR) 0.004AH
 SUBTOTAL 0.071AH

20X SAFETY FACTOR 0.014AH
 TOTAL NEW AMPS-HRS REQUIRED 0.085AH

PROVIDE ADDITIONAL 6AH BATTERY CAPACITY AND REPLACE EXISTING FACP 12AH BATTERY WITH NEW 18AH BATTERIES

VOLTAGE DROP CALCULATION

WORST CASE VOLTAGE DROP AT THE LAST DEVICE

SIGNAL CKT	AMPERES	APPROX LENGTH	RESISTIVITY	WIRE AWG	AREA CM	VOLTS DROPPED	% VOLTS DROP
CKT. A	0.521A	370'	21.6	12	6530	0.047V	0.2%

SIGNAL CIRCUIT LOAD SUMMARY

CKT. #	OUTDOOR HORN	MINI HORN	VISUAL	AUDIO/VISUAL	AUDIO/VISUAL	AUDIO/VISUAL	AUDIO/VISUAL	SYNC MODULE	TOTAL
1	0	0	0	3	0	0	0	0	0.521A

FA CABLE SCHEDULE

TYPE	DESCRIPTION
A	INITIATING CIRCUIT CABLE 2#16 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE, FOR INDOOR VIA J-HOOK AND OUTDOOR VIA MIN. 3/4" CONDUIT INSTALLATION. WEST PENN #9900 OR EQUAL. CSFM# 7161-0859:0101
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. WEST PENN #AQ227 OR EQUAL. CSFM# 7161-0859:0101

BATTERY POWER CALCULATIONS

NEW INITIATING DEVICES SUMMARY (FACP)

DEVICE	NO. OF DEVICE	CURRENT PER DEVICE	STANDBY CURRENT	LED CURRENT
SMOKE DETECTOR	8	0.0003A	0.0065A	0.0024A
HEAT DETECTOR	8	0.0003A	0.0065A	0.0024A
SUB-TOTAL			0.0028A	0.104A

24 HOUR STANDBY CURRENT 0.067AH
 5 MINUTE LED CURRENT (0.083 HR) 0.004AH
 SUBTOTAL 0.071AH

20X SAFETY FACTOR 0.014AH
 TOTAL NEW AMPS-HRS REQUIRED 0.085AH

PROVIDE ADDITIONAL 6AH BATTERY CAPACITY AND REPLACE EXISTING FACP 12AH BATTERY WITH NEW 18AH BATTERIES

COMPLETE AUTOMATIC FIRE ALARM PLAN SUBMITTAL

- 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.
- 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 2013 C.F.C. SECTION 210 (C.F.C. SECTIONS 1006.2.4.2.2.1.1 AND 1006.2.4.2.2.1.5)

SHEET NOTES

- PROVIDE NEW FIRE ALARM SIGNAL AND AUDIO BOOSTER PANEL AND CONNECT TO (E) FACP PER RISER DIAGRAM. PROVIDE 110V POWER CONNECTION AND DEDICATED CIRCUIT FROM PANEL A-12. PROVIDE FIRE ZONE MAP. 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.
- LOCATE HEAT DETECTOR IN ATTIC AND SURFACE MOUNT ON THE BOTTOM OF RAFTER. DETECTOR COVERAGE WILL BE DERIVED 50% ACROSS THE RAFTER. FIELD VERIFY LOCATION WITH GENERAL CONTRACTOR AND PROVIDE ATTIC HEAT DETECTOR IN EACH BAY OF STRUCTURAL.
- CEILING SMOKE DETECTOR 5 FEET FROM NEW NAC SIGNAL EXPANDER PANEL.
- NEW UG 3/4" CONDUIT AND FA WIRING PER PLANS.
- PROVIDE NEW FIRE ALARM DIGITAL VOICE COMMAND CENTER AND INTERCONNECT TO EXISTING FIRE ALARM CONTROL PANEL AND SURFACE MOUNT NEXT TO (E) FACE. FIELD VERIFY EXACT LOCATION.

F.A SYSTEM SCOPE OF WORK

- PROVIDE AUTOMATIC FIRE ALARM SYSTEM WITH VOICE EVACUATION SPEAKERS FOR THE NEW CLASSROOM BUILDINGS PER PLANS.
- EXISTING FACP IS 24VDC ADDRESSABLE, AND CLASS B WIRING SYSTEM. AND WITH OFF SITE MONITORING SERVICE VIA AUTO DUAL LINE DIALER AND TELEPHONE LINES.
- 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 FACP CABINET DOOR.
- COMPLETE FIRE ALARM DRAWING SUBMITTAL IS PROVIDED.

FIRE ALARM NOTES

- THE SYSTEMS SHALL CONFORM TO CALIFORNIA ELECTRICAL CODES ARTICLE 760, CALIFORNIA FIRE CODE ARTICLE 10 AND CALIFORNIA BUILDING CODE, SECTION 305.9
- FIRE ALARM CIRCUITS SHALL BE RUN IN EMT CONDUIT PER SPECIFICATIONS
- 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.
- NO SPLICE SHALL BE PERMITTED IN PULLBOXS. ALL WIRE SHALL BE RUN CONTINUOUS BETWEEN TERMINAL CABINETS.
- ALL PENETRATIONS IN FIRE-RATED ASSEMBLIES SHALL BE SEALED IN COMPLIANCE WITH CHAPTER 7, C.B.C.
- 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 FORM 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.
- NEW FIRE ALARM AUDIBLES SHALL BE TAMPO CODE 3.
- A CERTIFICATE OF COMPLETION SHALL BE PROVIDED TO THE OWNER PER NFPA 72 AND THE CALIFORNIA FIRE CODE.
- 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)
- THE ALARM SYSTEM SHALL BE INSTALLED, TESTED, AND MAINTAINED IN ACCORDANCE WITH THE STATE FIRE MARSHAL'S REGULATIONS.
- 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.
- 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 110dBA 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.
- 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

- 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 LUJFX OR ULJLS BY UNDERWRITERS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BE ARRANGED BY OWNER.

SEISMIC ANCHORAGE

- TO COMPLY WITH 2013 CBC, TITLE 24, SECTION #1632A.
- 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.

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FIRE ALARM PLAN

FREMONT ELEMENTARY SCHOOL
3 RELOCATABLE CLASSROOMS
BAKERSFIELD CITY SCHOOL DISTRICT
607 TEXAS STREET, BAKERSFIELD, CA

Issue Date: 00/00/14
Date: 05/28/14
Designer: J. CHONG
DR: J. CHONG
PC: CJM

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