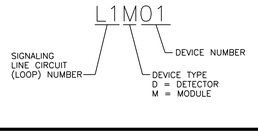
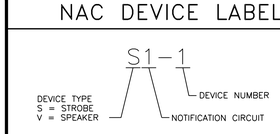
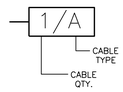
SLC DEVICE LABEL



NAC DEVICE LABEL



CABLE DESIGNATIONS



NOTE: REFER TO CABLE SCHEDULE FOR CABLE TYPE SPECIFICATIONS

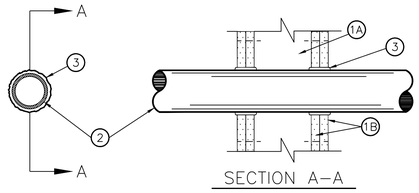
WIRE/CABLE COLOR CODING

CIRCUIT TYPE	THHN/THWN WIRE		NON-CONDUIT CABLE		
	+	−	JACKET	+	−
IDC	RED	BLACK	RED	RED	BLACK
SLC	N/A	N/A	RED	RED	BLACK
24V	RED	BLACK	RED	RED	BLACK
DOOR HOLDERS	PINK	PURPLE	RED	RED	BLACK
NAC (2-WIRE)					
HORN & STROBE	YELLOW	BLUE	RED	RED	BLACK
NAC (4-WIRE)					
SPEAKER	YELLOW	BLUE	RED	YELLOW	BLUE
STROBE	RED	BLACK		RED	BLACK

NOTE:
1: NOT ALL CABLES ARE USED ON ALL PROJECTS.

THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ)

SYSTEMS NO. CP25WB+ CAULK ONLY
(FORMERLY SYSTEM NO. 147A)
F RATINGS--1,2,3 AND 4 HR (SEE ITEMS 2 AND 3)
T RATINGS--0,1,2,3 AND 4 HR (SEE ITEM 3)



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 U.L. Fire Resistance Directory and shall include the following contruction 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 nominal 2 by 4 in. lumber spaced 16 in. OC with nominal 2 by 4 in. lumber end plates and cross braces. Steel studs to be minimum 3-5/8 in. wide by 1-3/8 in. deep channels spaced max. 24 in. O.C.

   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, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the U.L. Fire Resistance Directory. Maximum diameter of opening is 13-1/2 in.

2. Pipe or Conduit-Nom 12 in. dia. (or smaller) Schedule 10 (or heavier) steel pipe, nom. 6 in. dia. (or smaller) steel conduit, nom. 4 in. dia. (or smaller) steel Electrical Metallic Tubing or Type L (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 (Item 3) is 2 hr. 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* – CP25WB+ Caulk – Caulk 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 caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F rating of the firestop system is dependent upon the hourly fire rating of 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 or 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 Diameter, in.	Annular Space, in.	F Rating Hour	T Rating, Hour
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
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 hour.

* Bearing the UL Classification Marking.

OSFM NOTES

1. SCOPE OF WORK: FURNISH EQUIPMENT, SPECIALTY CABLE AND DEVICES. FURNISH SHOP DRAWINGS, AND PROGRAMMING FOR A FIRE ALARM SYSTEM AS SHOWN ON THESE DRAWINGS AND AS PER CONTRACT DRAWINGS AND SPECIFICATIONS.
2. THE FIRE ALARM SHALL CONFORM TO ARTICLE 760 OF THE 2016 CEC.
3. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE CALIFORNIA STATE FIRE MARSHAL.
4. A MINIMUM OF 72 HOURS NOTICE SHALL BE REQUIRED FOR ANY TESTING AND/OR INSPECTION.
5. ALL DEVICES OF THE FIRE ALARM SYSTEM SHALL BE APPROVED AND LISTED BY THE CALIFORNIA STATE FIRE MARSHAL.
6. A STAMPED SET OF APPROVED FIRE ALARM DRAWINGS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION. ANY DEVIATION FROM THE APPROVED PLANS, INCLUDING THE SUBSTITUTION OF DEVICES, SHALL BE APPROVED BY THE DIVISION OF THE STATE ARCHITECT.
7. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF THE INSPECTOR OF RECORD.
8. A CERTIFICATE OF COMPLIANCE SHALL BE PREPARED BY THE INSTALLER AND GIVEN TO THE CALIFORNIA STATE FIRE MARSHAL UPON COMPLETION OF THE INSTALLATION.

FIRE ALARM SYSTEM MATERIAL LIST

SYMBOL	PART #	QTY.	DESCRIPTION	MANUFACTURER	CSFM #	BACKBOX* MOUNTING	BACKBOX* SIZE* WxHxD	BACKBOX* TRIM RING*
FACP1	E3	1	FIRE ALARM VOICE TRANSPONDER (NODE 1 & 2)	GAMEWELL/FCI	7165-1703:125	SURFACE	19.3"x30"x4.5"	N/A
	LCD-E3	1	LCD KEYPAD & DISPLAY					
	ILI-MB-E3	1	INTELLIGENT LOOP INERFACE BOARD (MAIN)					
	1100-1324	1	INI-VGX-UTP COPPER VOICE GATEWAY					
	PM-9	1	120VAC 9A POWER SUPPLY					
	AM-50-70	1	50W, 70V AUDIO AMPLIFIER (4 MAX)					
	DACT-E3	1	DIGITAL ALARM COMMUNICATOR					
	E3ID2-C	1	3-BAY INNER DOOR					
	E3BB-RC/INCC	1	"C" SIZE ENCLOSURE (RED)					
	E3-INX-CPLATE	1	MOUNTING PLATE					
	900375	1	PM-9 ADAPTER PLATE FOR INI-VG CARD					
	ES17-12	2	12VDC 18AH LEAD ACID BATTERY	MK BATTERY	N/A			
FACP2	INX	1	FIRE ALARM VOICE TRANSPONDER (NODE 3 & 4)	GAMEWELL/FCI	7165-1703:125	SURFACE	19.3"x30"x4.5"	N/A
	ILI-MB-E3	1	INTELLIGENT LOOP INERFACE BOARD (MAIN)					
	1100-1324	1	INI-VGX-UTP COPPER VOICE GATEWAY					
	PM-9	1	120VAC 9A POWER SUPPLY					
	AM-50-70	3	50W, 70V AUDIO AMPLIFIER (4 MAX)					
	E3BB-RC/INX	1	"C" SIZE TRANSPONDER ENCLOSURE (RED)					
	E3-INX-CPLATE	1	MOUNTING PLATE					
	900375	1	PM-9 ADAPTER PLATE FOR INI-VG CARD					
	ES17-12	2	12VDC 18AH LEAD ACID BATTERY	MK BATTERY	N/A			
LOC	LOC	1	FIRE ALARM LOC (NODE 63 & 64)	GAMEWELL/FCI	7165-1703:125	SURFACE	19.25"x10"x3"	N/A
	1100-1324	1	INI-VGX-UTP COPPER VOICE GATEWAY					
	1100-0505	1	NETWORK GRAPHIC ANNUNCIATOR					
	1100-0452	1	INCC-MIC PAGING MICROPHONE MODULE					
	E3ID3-A	1	AA SIZE INNER DOOR (3 SLOT)					
	E3BB-RAA	1	AA SIZE ENCLOSURE (RED)					
NPS	HPFF8	1	REMOTE POWER SUPPLY	HONEYWELL	7315-1637:102	SURFACE	16.65"x19"x5.2"	N/A
	AOM-2SF		ADDRESSABLE CONTROL MODULE		7300-1703:102			
	ES12-7	2	12VDC/7AH BATTERY	MK BATTERY	-			
F	MS-7ASF	5	MANUAL PULL STATION	GAMEWELL/FCI	7150-1703:119	FLUSH	4" SQ. DEEP	1-GANG
	ASD-PL2F	105	ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR	GAMEWELL/FCI	7272-1703:121	FLUSH	4" SQ. DEEP	3" OCT.
	B210LP		LOW PROFILE DETECTOR BASE	SYSTEM SENSOR	7300-1653:109			
	ATD-L2F	1	ADDRESSABLE 135F HEAT DETECTOR	GAMEWELL/FCI	7270-1703:115	FLUSH	4" SQ. DEEP	3" OCT.
	B210LP		DETECTOR BASE	SYSTEM SENSOR	7300-1653:109			
A	ATD-HL2F	84	ADDRESSABLE 190F HEAT DETECTOR	GAMEWELL/FCI	7270-1703:115	FLUSH	4" SQ. DEEP	3" OCT.
	B210LP		DETECTOR BASE	SYSTEM SENSOR	7300-1653:109			
	MSC-COF	18	ADDRESSABLE MULTI-CRITERIA DETECTOR	GAMEWELL/FCI	7275-1703:175	FLUSH	4" SQ. DEEP	3" OCT.
	B210LP		DETECTOR BASE	SYSTEM SENSOR	7300-1653:109			
M	AOM-2RF	1	ADDRESSABLE RELAY MODULE	GAMEWELL/FCI	7300-1703:102	FLUSH	4" SQ. DEEP	2-GANG
	SPSRL	5	SPEAKER & MULTI-CANDELA STROBE (WALL) RED	SYSTEM SENSOR	7320-1653:505	FLUSH	4" SQ. DEEP	4" SQ. EXT.
	SPSCRL	66	SPEAKER & MULTI-CANDELA STROBE (CLG) RED		7320-1653:505	FLUSH	4" SQ. DEEP	4" SQ. EXT.
	SCRL	1	MULTI-CANDELA STROBE (CLG) RED		7125-1653:503	FLUSH	4" SQ. DEEP	2-GANG
	SPRK	11	OUTDOOR SPEAKER (WALL) RED		7320-1653:201	SURFACE	INCLUDED	N/A
DOC	SSU00685	1	FAD DOCUMENT BOX	SAE	-	SURFACE	N/A	N/A

* NOTES: 1. ALL REQUIRED BACKBOXES, TRIM RINGS, ENCLOSURES, COVER PLATES, ETC. ARE TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED ABOVE.
2. ANY DEVIATION FROM LISTED EQUIPMENT SHALL BE APPROVED .PRIOR TO "ROUGH-IN".

CABLE SCHEDULE

TYPE	LINE	DESCRIPTION	USE	PROVIDED BY:	INSTALLED BY:
DEVICES BOXES WILL BE STUBBED TO ACCESSIBLE CEILINGS. CABLES INSTALLED ON J-HOOKS AT 4'-0" ON CENTER					
S	———	WEST PENN D990 (2#16 UTP FPL)	SLC (INITIATION CIRCUIT) INTERIOR	EKC	EKC
SU		WEST PENN AQ225 (2#16 UTP FPL)	SLC (INITIATION CIRCUIT) EXTERIOR	EKC	EKC
N	— · —	WEST PENN 998S (2#12 UTP FPL)	VISUAL (NOTIFICATION CIRCUIT) INTERIOR	EKC	EKC
V		WEST PENN 994S (2#14 UTP FPL)	SPEAKER (NOTIFICATION CIRCUIT) INTERIOR	EKC	EKC
NU		WEST PENN AQ227 (2#12 UTP FPL)	VISUAL (NOTIFICATION CIRCUIT) EXTERIOR	EKC	EKC
VU		WEST PENN AQ226 (2#14 UTP FPL)	SPEAKER (NOTIFICATION CIRCUIT) EXTERIOR	EKC	EKC

CABLE DESCRIPTION ABBREVIATIONS

ABBREV.	DEFINITION	ABBREV.	DEFINITION	ABBREV.	DEFINITION
FPL	FIRE ALARM POWER-LIMITED	OS	OVERALL SHIELDED CABLE	STP	SHIELDED TWISTED PAIR
FPLP	FIRE ALARM POWER-LIMITED, PLENUM	SOL	SOLID CONDUCTOR	US	UNSHIELDED CABLE
FPLR	FIRE ALARM POWER-LIMITED, RISER	STR	STRANDED CONDUCTOR	UTP	UNSHIELDED TWISTED PAIR

CONTRACTOR'S NOTES

1. SHOWN IN THIS DRAWING SET IS EKC ENTERPRISES ENGINEERED FIRE ALARM SYSTEM PER CONTRACTUAL DESIGN DRAWINGS AND SPECIFICATIONS.
2. CONTRACTOR SHALL NOT DEVIATE BY MORE THAN 5% FROM THE FINAL APPROVED SHOP DRAWINGS.
3. WIRE RUNS HAVE BEEN ENGINEERED TO COMPLY WITH SPECIFIC VOLTAGE DROP REQUIREMENTS. ANY DEVIATION FROM SHOWN WIRE RUNS, WHICH RESULTS IN NON-COMPLIANCE WITH VOLTAGE DROP REQUIREMENTS, SHALL BE THE SOLE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
4. IF WIRING IS INSTALLED BY ANOTHER CONTRACTOR AND THAT CONTRACTOR DEVIATES BY MORE THAT 5% FROM THE SHOP DRAWINGS, THAT CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL ADDITIONAL ENGINEERING COSTS THAT MAY ARISE TO ACCOMMODATE INCLUSION OF THESE DEVIATIONS ON RECORD DRAWINGS (AS-BUILTS).
5. THESE SUBMITTED SHOP DRAWINGS ARE COMPLETE. EKC ENTERPRISES SHALL NOT BEAR ANY ADDITIONAL COSTS OF RE-ENGINEERING RECORD DRAWINGS (AS-BUILTS)
6. EKC ENTERPRISES SHALL NOT BEAR ANY LIABILITY FOR ENGINEERED DESIGN IF MORE THAN 5% DEVIATION HAS OCCURRED DURING INSTALLATION.
7. ALL 120VAC POWER SOURCES SHALL BE ON DEDICATED CIRCUITS WITH A CIRCUIT BREAKER LOCK AND A LABEL IN ACCORDANCE WITH NFPA 72.
8. ALL 24VDC & SLC WIRE TO BE INSTALLED IN DEDICATED CONDUIT SEPARATE FROM 120VAC WIRING.
9. ALL SMOKE DETECTORS AND SIGNAL LINE CIRCUIT (SLC) WIRING SHALL BE INSTALLED MINIMUM 3 FEET FROM ELECTRONIC BALLAST (LIGHTING FIXTURES).
10. THE INSTALLATION INSTRUCTIONS PROVIDED WITH THE DEVICE SUPERSEDES ANYTHING THAT MAY APPEAR ON THESE DOCUMENTS.
11. IT IS THE INSTALLERS RESPONSIBILITY TO INSURE HE IS INSTALLING THE DEVICES PER MANUFACTURES INSTRUCTIONS.
12. ALL WIRING IS TO BE CONTINUOUS FROM DEVICE TO DEVICE. DEVICE LOCATIONS ARE NOT TO BE MADE INTO JUNCTION BOXES WITHOUT EKC ENTERPRISES PRIOR WRITTEN APPROVAL. EKC ENTERPRISES IS NOT RESPONSIBLE TO MAKEUP WIRING AT JUNCTION BOXES OR WIRING AT DEVICE LOCATIONS THAT IS NOT ASSOCIATED WITH THAT RESPECTIVE DEVICE.
13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE WORK AVAILABLE FOR INSPECTION.
14. IF USING A RADIO TRANSMITTER THEN IT WILL BE USED AS A SINGLE TRANSMISSION PATH.
15. CONTRACTOR REQUIRED TO PROVIDE DECIBEL METER DURING FINAL ACCEPTANCE TESTING TO FIELD VERIFY AUDIBLE CHARACTERISTICS.
16. HVAC SYSTEMS THAT FLOW A CUMULATIVE 2,000 CFM OF SUPPLY AIR MUST BE INTERCONNECTED TO THE FIRE ALARM SYSTEM AND HAVE AUTOMATIC SHUT OFF. EACH HVAC UNIT MUST SHUT WHEN ANY UNIT DETECTS SMOKE.
17. INSTALLATION WILL COMPLY WITH SECTION 300.21 OF CALIFORNIA ELECTRIC CODE, REGARDING PENETRATIONS THROUGH FIRE RESISTIVE ASSEMBLIES TO PREVENT THE SPREAD OF FIRE AND TOXIC PRODUCTS OF COMBUSTION.
18. ALL OTHER EXTINGUISHING SYSTEMS WILL BE/OR ARE INTERCONNECTED TO THE FIRE ALARM CONTROL PANEL AS REQUIRED.
19. FIRE ALARM RECORD OF COMPLETION TO BE PROVIDED TO AT THE FINAL INSPECTION.
20. A COMPLETED COPY OF THE APPROVED PLAN SET SHALL BE ON SITE DURING ANY FIRE DEPARTMENT INSPECTION.
21. A DOCUMENT BOX SHALL BE PROVIDED ADJACENT TO THE MAIN FACP AND CONTAIN THE FOLLOWING: OPERATION & MAINTENANCE MANUAL, RECORD DRAWINGS, & TESTING FORMS.

PROJECT INFORMATION

SCOPE OF WORK:

FURNISH EQUIPMENT, SPECIALTY CABLE AND DEVICES. FURNISH SHOP DRAWINGS, AND PROGRAMMING FOR A FIRE ALARM SYSTEM AS SHOWN ON THESE DRAWINGS AND AS PER CONTRACT DRAWINGS AND SPECIFICATIONS.

CBC OCCUPANCY CLASSIFICATION:

B – BUSINESS (ADMINISTRATION OFFICE)
A2.1 – ASSEMBLY (CAFETERIA)
E – EDUCATION (CLASSROOMS)

FIRE SPRINKLER REQUIREMENTS:

BUILDINGS ARE NOT SPRINKLERED.

PATHWAY CLASS:

CLASS B (NFPA 72, 2016 12.3.2)

PATHWAY SURVIVABILITY:

LEVEL 0 (NFPA 72, 2016 12.4.1)

SYSTEM REQUIREMENTS:

THIS SYSTEM IS REQUIRED PER THE CALIFORNIA BUILDING CODE.
THIS SYSTEM IS IN COMPLIANCE WITH ADA.

CENTRAL STATION INFORMATION:

THIS SYSTEM IS MONITORED BY:
DEALER: ELITE ALARM, INC. C10# 999925 ACO# 7474 844-903-5483

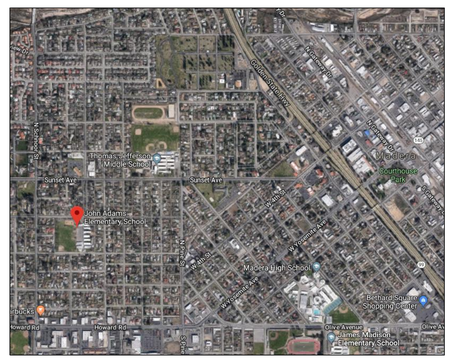
LIST OF CALIFORNIA CODE OF REGULATIONS

APPLICABLE CODES:

2016 CALIFORNIA ELECTRICAL CODE (CEC)
2016 CALIFORNIA MECHANICAL CODE (CMC)
2016 CALIFORNIA FIRE CODE (CFC)
2016 CALIFORNIA BUILDING CODE (CBC)
2016 NATIONAL FIRE ALARM & SIGNALING CODE (NFPA 72)

DRAWING INDEX

MAP



EKC Enterprises, Inc.
4658 E. Weathermaker Ave
Fresno, CA 93703
Phone: (559) 438-0330
Fax: (559) 438-0333

FILE NUMBER: 20-30
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
02-116790
AC. - FLS. mnr SS. -
DATE: 08/09/2018
FLS: Mark Roberts

ENGINEER: GREG ALAVEZOS
NICET: #90089
CADD BY: GREG ALAVEZOS
CUSTOMER:

MADERA UNIFIED SCHOOL DIST
1902 HOWARD ROAD
MADERA, CA 93637
PHONE: 559-675-4500

PROJECT: FIRE ALARM SYSTEM
JOHN ADAMS ELEMENTARY
FIRE ALARM REPLACEMENT
1822 NATIONAL AVENUE
MADERA, CA 93637

C-10 LICENSE # 916095
ELITE ALARM INC ACO # 7474
NICET LEVEL 3 # 90089

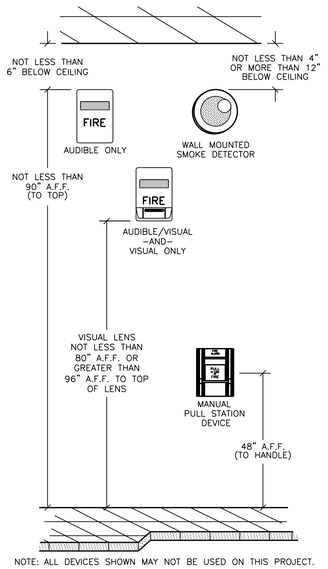
REV #	DATE
	-

DATE SUBMITTED: 4/16/18
PROJECT #: C18-0030
SHEET #: FA-1 OF SHEETS
FIRE ALARM SYSTEM COVER SHEET

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

DPG Engineering, Inc.
6702 N. Cedar Ave. Suite 205
Fresno, Ca. 93710
Ph. (559) 276-5144
Fax (559) 900-6929
Email @ dpgengineering.com

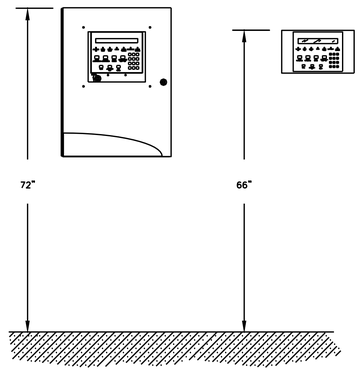
REGISTERED PROFESSIONAL ENGINEER DAVID P. GOTT 17951 ELECTRICAL STATE OF CALIFORNIA



NOTE: ALL DEVICES SHOWN MAY NOT BE USED ON THIS PROJECT.

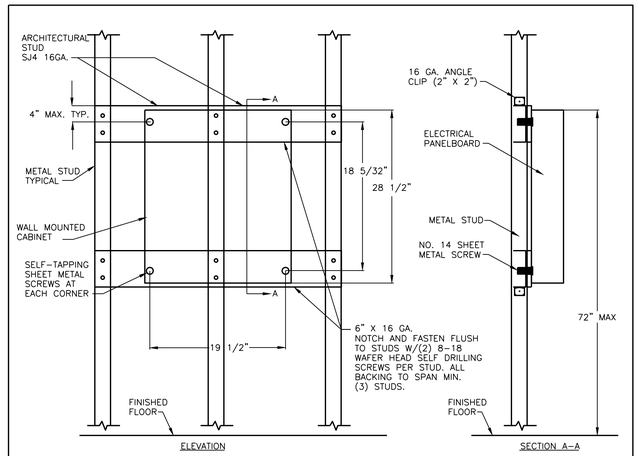
ELEVATION – FIRE ALARM DEVICES

SCALE: NO SCALE



FACP / REMOTE ANNUNCIATOR: ELEVATION DETAILS

SCALE: NONE



TYP. MOUNTING OF EQUIPMENT WEIGHING OVER 20 LBS. 120 LBS. MAXIMUM

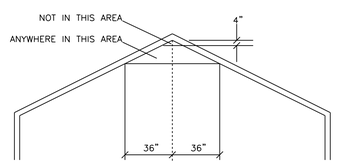
SCALE: SCALE

MISCELLANEOUS SYMBOLS AND ABBREVIATIONS

SYM./ABBREV.	PART #	DESCRIPTION	SYM./ABBREV.	PART #	DESCRIPTION
J	(FBO)	JUNCTION BOX	EOLR	N/A	END-OF-LINE RELAY
			(FBEC)		FURNISHED BY ELECTRICAL CONTRACTOR
STB		SIGNAL TERMINAL BACKBOARD	(FBFS)		FURNISHED BY FIRE SPRINKLER CONTRACTOR
			(FBMC)		FURNISHED BY MECHANICAL CONTRACTOR
STC		SIGNAL TERMINAL CABINET	(FBO)		FURNISHED BY OTHERS
			FSR		FIRE SPRINKLER RISER
#/		2#12, 1#12G THHN/THWN IN CONDUIT	IDC		INITIATING DEVICE CIRCUIT (HARDWIRED INITIATION CIRCUIT/ZONE)
		MECHANICAL UNIT	(N)		NEW
			N/A		NOT APPLICABLE
		UNDERGROUND PULLBOX	NAC		NOTIFICATION APPLIANCE CIRCUIT (SIGNALING CIRCUIT)
(X)		FUSE/FUSE BLOCK (X = AMPERAGE)	NC		NORMALLY CLOSED
			NO		NORMALLY OPEN
-W-		END-OF-LINE RESISTOR	P		PEAK (INSTALL DEVICE WITHIN 4' OF PEAK)
120V		120VAC POWER	PIV		POST INDICATOR VALVE
AFF	N/A	ABOVE FINISHED FLOOR	SLC		SIGNALING LINE CIRCUIT (ADDRESSABLE INITIATION LOOP)
C, COM		COMMON			
(E)		EXISTING	TYP.		TYPICAL
EOL		END-OF-LINE RESISTOR	UON		UNLESS OTHERWISE NOTED
			Z		ZONE

PROPER MOUNTING FOR DETECTORS ON WALL OR CEILING

PROPER MOUNTING FOR DETECTORS ON A SLOPED CEILING



PROPER MOUNTING FOR DETECTORS ON A PEAKED CEILING

DEVICE CEILING/WALL MOUNTING DETAILS

SCALE: NONE

GENERAL NOTES:

1. NO WORK ON THE FIRE ALARM SYSTEM SHALL BEGIN WITHOUT APPROVED PLANS AND SIGNED PERMITS.
2. ANY DEVIATION FROM THE DESIGN AND LOCATION OF EQUIPMENT SHOWN MUST FIRST HAVE A WRITTEN APPROVAL FROM EKC ENTERPRISES. ANY DEVIATION FROM DESIGN MUST ALSO BE INDICATED ON EKC ENTERPRISES SHOP DRAWINGS AND RETURNED TO EKC ENTERPRISES AT TIME OF JOB COMPLETION. ANY CHANGES MUST BE RESUBMITTED TO THE AHJ FOR APPROVAL.
3. ALL WIRING SHALL BE SUPERVISED.
4. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. WIRE MUST BE CUT FOR IN AND OUT CIRCUITS.
5. "T"-TAPPING OF WIRING IS PROHIBITED, EXCEPT FOR CLASS "B"/STYLE "4" SIGNALING LINE CIRCUIT (SLC) ADDRESSABLE LOOP WIRING.
6. THE FIRE ALARM CONTROL PANEL AND POWER EXTENDER PANELS ARE NOT TO BE USED AS A TERMINAL CABINET. ALL WIRING INTO PANELS SHALL BE LANDED ONTO APPROPRIATE TERMINAL ONLY. NO SPLICING OR THROUGH WIRING WILL BE ALLOWED IN PANELS.
7. ALL FIRE ALARM WIRING MUST TEST FREE OF OPENS, SHORTS, AND GROUNDS.
8. ALL WIRING MUST ENTER AT THE TOP OF THE FIRE ALARM CONTROL PANEL AND POWER EXTENDER PANELS.
9. FIRE ALARM DRAWINGS ARE SCHEMATIC IN NATURE ONLY. ELECTRICAL CONTRACTOR TO ROUTE CONDUIT AS FIELD CONDITIONS INDICATE.
10. PENETRATIONS TO FIRE-RATED ASSEMBLIES SHALL BE PROTECTED BY A U.L. APPROVED THROUGH-PENETRATION FIRE-STOP SYSTEM, IN ACCORDANCE WITH CBC CHAPTER 7.
11. 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 AUTHORITY HAVING JURISDICTION.
12. SYSTEM IS POWER LIMITED.
13. INSTALLATION SHALL CONFORM TO REQUIREMENTS OF ALL APPLICABLE CODES.
14. DUCT DETECTOR HOUSINGS ARE NOT TO BE MOUNTED IN EXTERIOR LOCATIONS UNLESS PRODUCT IS SPECIFICALLY DESIGNED AND LISTED FOR THIS USE. REFER TO SUBMITTED MANUFACTURERS LITERATURE FOR OPERATING TEMPERATURE AND HUMIDITY RANGES OF PRODUCT TO BE INSTALLED. LOCATE HOUSINGS IN LOCATIONS SUITABLE TO MEET PRODUCTS REQUIREMENTS.
15. SMOKE DETECTORS ARE NOT TO BE LOCATED WITHIN 3' OF ANY SUPPLY AIR REGISTERS, IN ACCORDANCE WITH NFPA 72, AND SHALL NOT BE PLACED WHERE RETURN AIR MOVEMENT SHALL EXCEED THE MANUFACTURERS RECOMMENDATION AS TO EFFECT THE OPERATION OF THE SMOKE DETECTOR.
16. WIRING SHALL BE PER PLAN WITH RESPECT TO CONDUCTOR SIZE, TYPE, QUANTITY AND COLOR CODE. CONDUCTORS SHALL BE PERMANENTLY MARKED FOR FUTURE IDENTIFICATION.
17. CONDUIT KNOCKOUTS ARE PROVIDED ON ALL MANUFACTURES PROVIDED BACKBOXES. DO NOT ENLARGE OR CHANGE LOCATIONS OF CONDUIT ENTRY WITHOUT PRIOR APPROVAL OF EKC ENTERPRISES.
18. ALL FIRE ALARM CIRCUITS ARE CONTINUOUS FROM DEVICE TO DEVICE.
19. DETECTOR AND AUDIBLE/VISUAL POLARITY SHALL BE OBSERVED.
20. AUDIBLE/VISUAL CIRCUIT WIRING IS SUPERVISED. NO PARALLEL BRANCHING IS PERMISSIBLE.
21. 120VAC POWER SHALL NOT BE APPLIED TO FIRE ALARM PANEL WITHOUT DIRECT SUPERVISION OF RWC TECHNICIAN.
22. STANDARD CONTROL PANEL, TERMINAL BOXES ETC. MOUNTING IS 6'-0" FROM FINISHED FLOOR TO TOP OF DEVICE UNLESS OTHERWISE NOTED.
23. INSTALLING CONTRACTOR SHALL RETURN ONE SET OF ACCURATELY MARKED DRAWINGS FOR "AS-BUILT" PURPOSES.

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

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EKC Enterprises Inc

FILE NUMBER: 29-30

IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
02-116790
AC. - FLS. mnr SS. -
DATE: 08/09/2018

ENGINEER: GREG ALAVEZOS
NICET: #90089
CADD BY: GREG ALAVEZOS
CUSTOMER:
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PHONE: 559-675-4500

PROJECT: FIRE ALARM SYSTEM
JOHN ADAMS ELEMENTARY FIRE ALARM REPLACEMENT
1822 NATIONAL AVENUE
MADERA, CA 93637

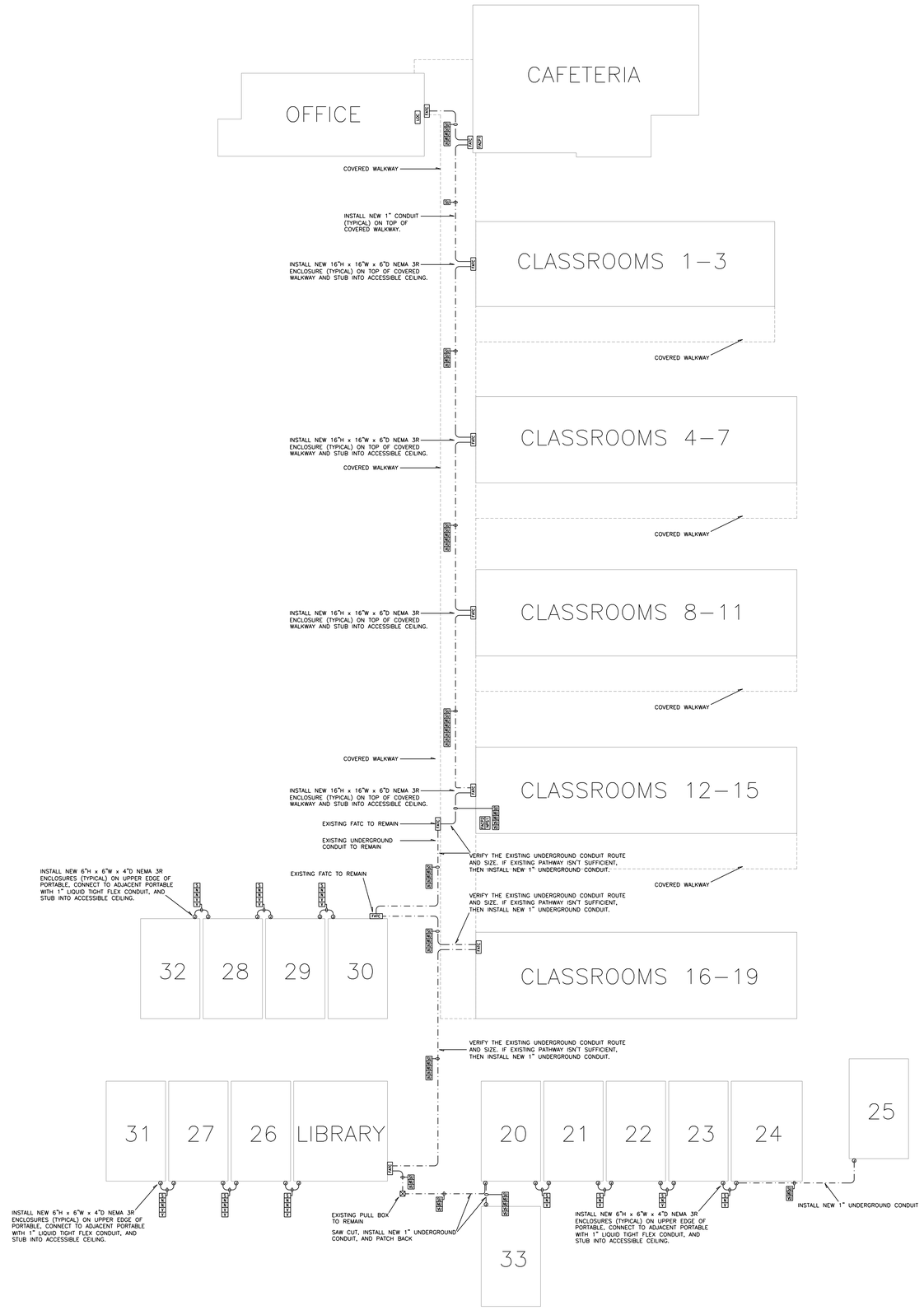
C-10 LICENSE # 916095
ELITE ALARM INC ACO # 7474
NICET LEVEL 3 # 90089

REV #	DATE
	-

DATE SUBMITTED: 4/16/18

PROJECT #: C18-0030

SHEET #: FA-2
OF SHEETS
~~FIRE~~ ALARM SYSTEM NOTES SHEET



SITE PLAN
SCALE: 1" = 20'-0"

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

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PROJECT: FIRE ALARM SYSTEM
JOHN ADAMS ELEMENTARY
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1822 NATIONAL AVENUE
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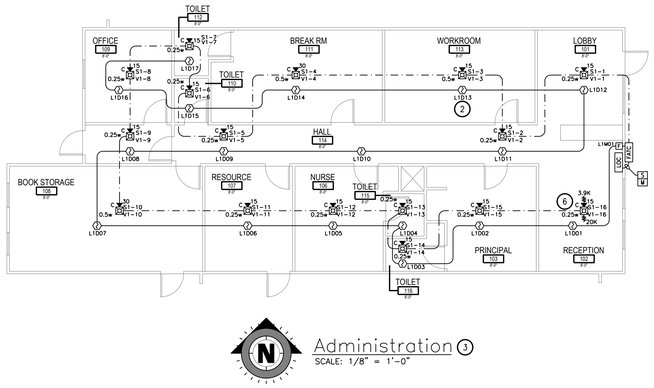
REV #	DATE
	-

DATE SUBMITTED: 4/16/18

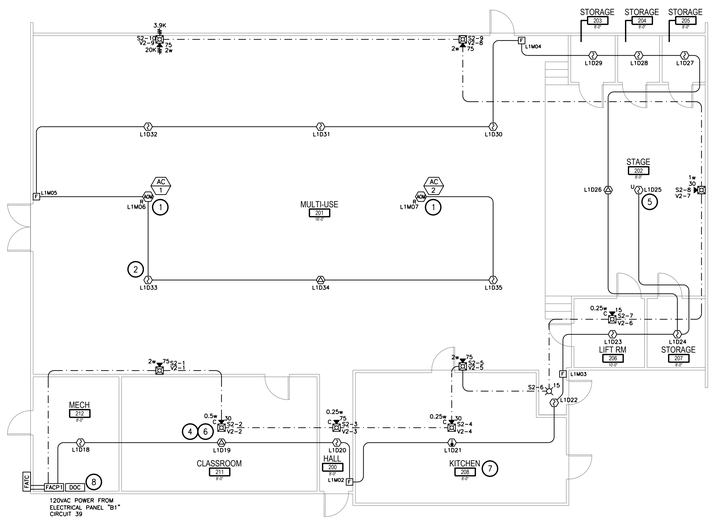
PROJECT #: C18-0030

SHEET #: FA-3
OF SHEETS

FIRE ALARM SYSTEM
LEVEL 1



Administration (3)
SCALE: 1/8" = 1'-0"



Cafeteria (5)
SCALE: 1/8" = 1'-0"

KEYED NOTES

1. SHUTDOWN HVAC UNIT FAN UPON ACTIVATION OF AREA DETECTORS IN THIS BUILDING.
2. VERIFY THAT SMOKE DETECTOR LOCATIONS COMPLY WITH SHEET FA-2 GENERAL NOTE 15, LIGHTING FIXTURES, AND OTHER MECHANICAL OBSTRUCTIONS (TYPICAL).
3. THIS BUILDING DOESN'T HAVE AN ACCESSIBLE CEILING AND THEREFORE ATTIC HEAT DETECTION ISN'T REQUIRED.
4. THE EXISTING ROOFTOP HVAC UNIT CONTAINS A GAS FIRED FURNACE THEREFORE CARBON MONOXIDE DETECTION IS REQUIRED.
5. PROVIDE AREA SMOKE DETECTION IN ACCESSIBLE AREA UNDER THE STAGE.
6. SEE SHEET FA-1 FOR SLC & NAC DEVICE LABEL SCHEMA.
7. THE KITCHEN HOOD ISN'T EQUIPPED WITH AN ANSUL SYSTEM.
8. FIRE ALARM RECORD DOCUMENTS CABINET
   NFPA 72, 7.7.2
   -Every new Fire Alarm System shall provide a documentation cabinet, installed at the system control panel or other approved location.
   -The documentation cabinet shall be prominently labeled, 'SYSTEM RECORD DOCUMENTS'.
   -All record and testing documentation shall be stored in the cabinet.
   -Contents shall be accessible by authorized personnel only.
   -Where cabinet is installed in a location other than the system control unit, its location shall be identified at the system control unit.

   SYSTEM DOCUMENTS AS APPLICABLE
   -Record Drawings/As-Builts
   -Equipment Cut Sheets & CA SFM Listings
   -Alternative Means and Methods
   -Performance Based Design Documentation (NFPA 72, 7.3.7)
   -System Record of Completion & any Supplemental Inspection and Testing Documentation (NFPA 72, 7.8.2)
   -Emergency Response Plan (NFPA 72, 7.3.8)
   -Evaluation Documentation (NFPA 72, 7.3.9)
   -Risk Analysis Documentation (NFPA 72, 7.3.6)
   -Software & Firmware Control Documentation (NFPA 72, 23.2.2)

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

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PROJECT: FIRE ALARM SYSTEM
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1822 NATIONAL AVENUE
MADERA, CA 93637

C-10 LICENSE # 916095
ELITE ALARM INC ACO # 7474
NICET LEVEL 3 # 90089

REV #	DATE
	-

DATE SUBMITTED: 4/16/18

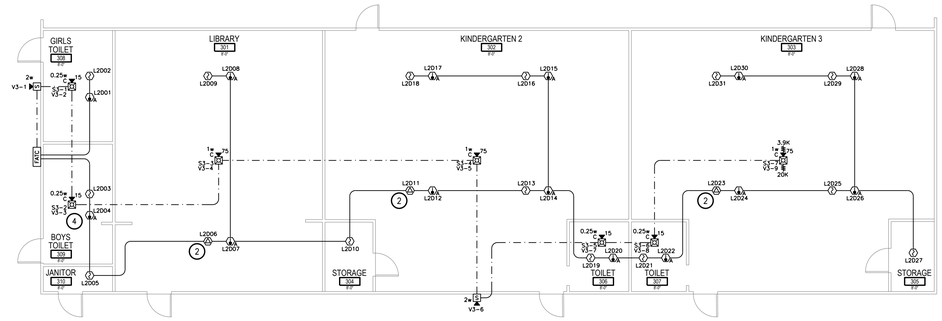
PROJECT #: C18-0030

SHEET #: FA-4 OF SHEETS

FIRE ALARM SYSTEM
ADMIN & CAFETERIA

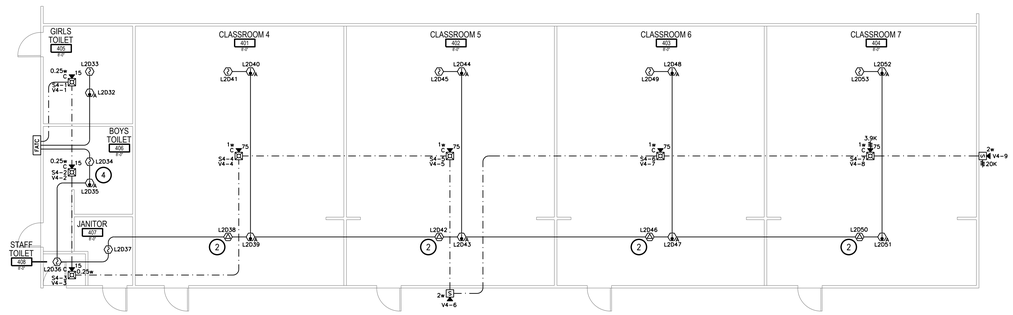
SHEET NOTES

1. HVAC UNITS ARE LESS THAN 2,000 CFM AND DON'T SERVE COMMON AREAS THEREFORE FAN SHUTDOWN ISN'T REQUIRED.
2. HVAC UNITS CONTAIN NATURAL GAS FURNACES THEREFORE CARBON MONOXIDE (CO) DETECTION IS PROVIDED.
3. VERIFY THAT SMOKE DETECTOR LOCATIONS COMPLY WITH SHEET FA-2 GENERAL NOTE 15, LIGHTING FIXTURES, AND OTHER MECHANICAL OBSTRUCTIONS (TYPICAL).
4. SEE SHEET FA-1 FOR SLC & NAC DEVICE LABEL SCHEMA.



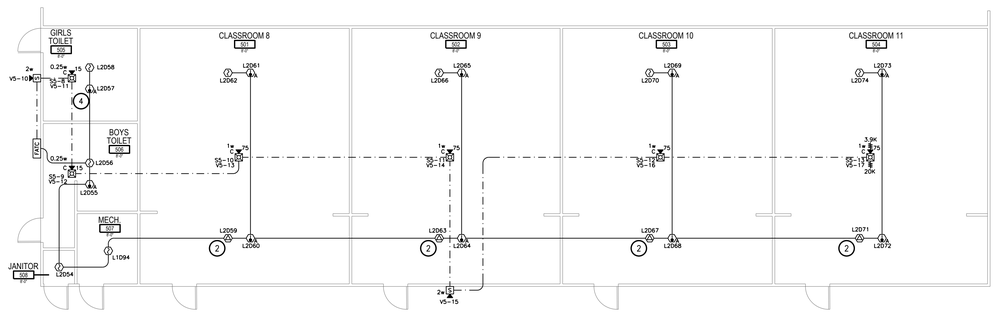
Classrooms K1 through K3

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



Classrooms 4 through 7

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



Classrooms 8 through 11

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

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DATE: 08/09/2018

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PROJECT: FIRE ALARM SYSTEM
JOHN ADAMS ELEMENTARY FIRE ALARM REPLACEMENT
1822 NATIONAL AVENUE
MADERA, CA 93637

C-10 LICENSE # 916095
ELITE ALARM INC ACO # 7474
NICET LEVEL 3 # 90089

REV #	DATE
	-

DATE SUBMITTED: 4/16/18

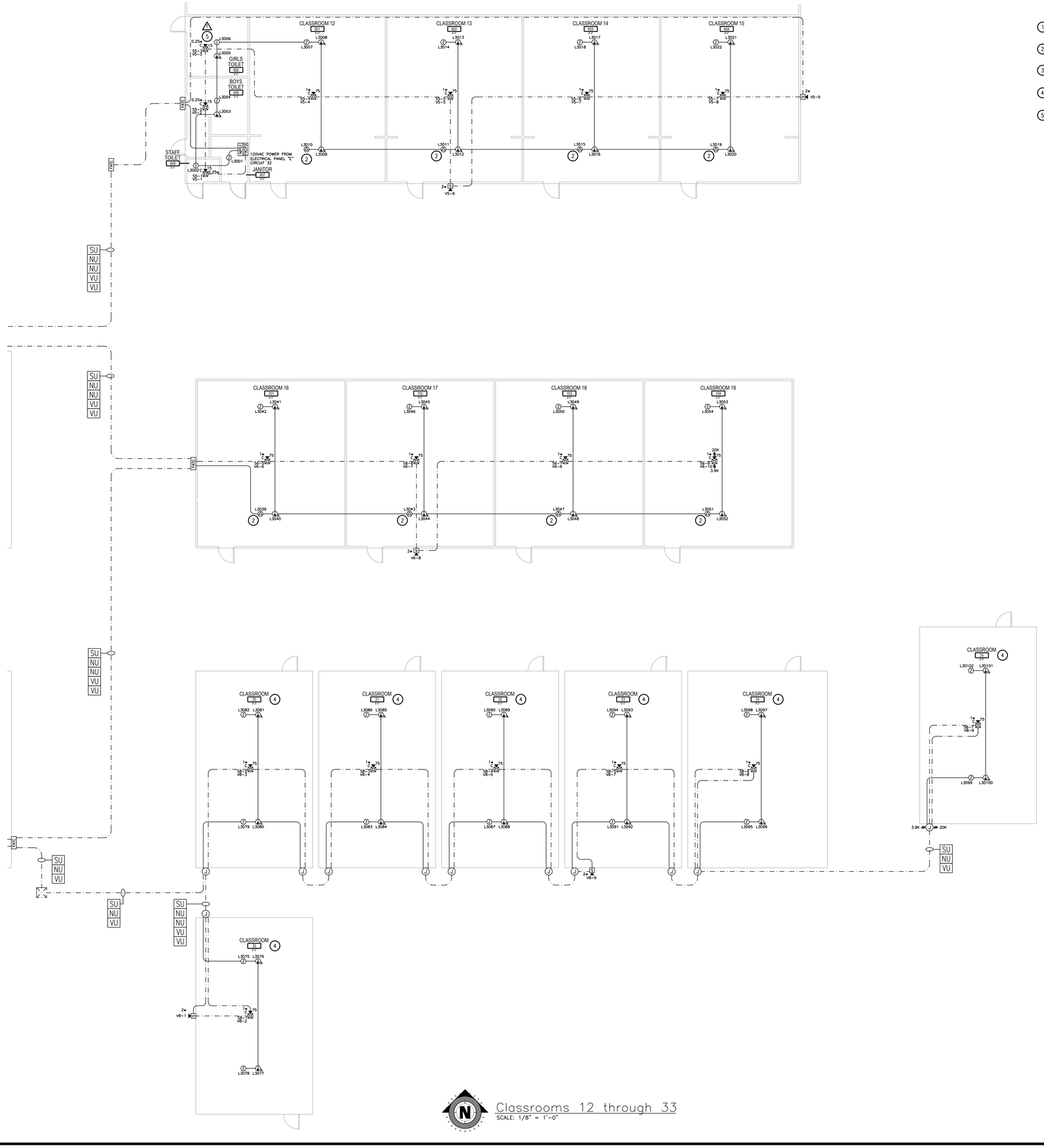
PROJECT #: C18-0030

SHEET #: FA-5 OF SHEETS

FIRE ALARM SYSTEM CLASSROOMS

SHEET NOTES

1. HVAC UNITS ARE LESS THAN 2,000 CFM AND DON'T SERVE COMMON AREAS THEREFORE FAN SHUTDOWN ISN'T REQUIRED.
2. HVAC UNITS CONTAIN NATURAL GAS FURNACES THEREFORE CARBON MONOXIDE (CO) DETECTION IS PROVIDED.
3. VERIFY THAT SMOKE DETECTOR LOCATIONS COMPLY WITH SHEET FA-2 GENERAL NOTE 15, LIGHTING FIXTURES, AND OTHER MECHANICAL OBSTRUCTIONS (TYPICAL).
4. HVAC UNITS ARE HEAT PUMPS AND DON'T CONTAIN NATURAL GAS FURNACES THEREFORE CARBON MONOXIDE (CO) DETECTION ISN'T REQUIRED.
5. SEE SHEET FA-1 FOR SLC & NAC DEVICE LABEL SCHEMA.



Classrooms 12 through 33
SCALE: 1/8" = 1'-0"

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ELITE ALARM INC ACO # 7474
NICET LEVEL 3 # 90089

REV #	DATE
	-

DATE SUBMITTED: 4/16/18

PROJECT #: C18-0030

SHEET #: FA-6
OF SHEETS

FIRE ALARM SYSTEM
CLASSROOMS

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

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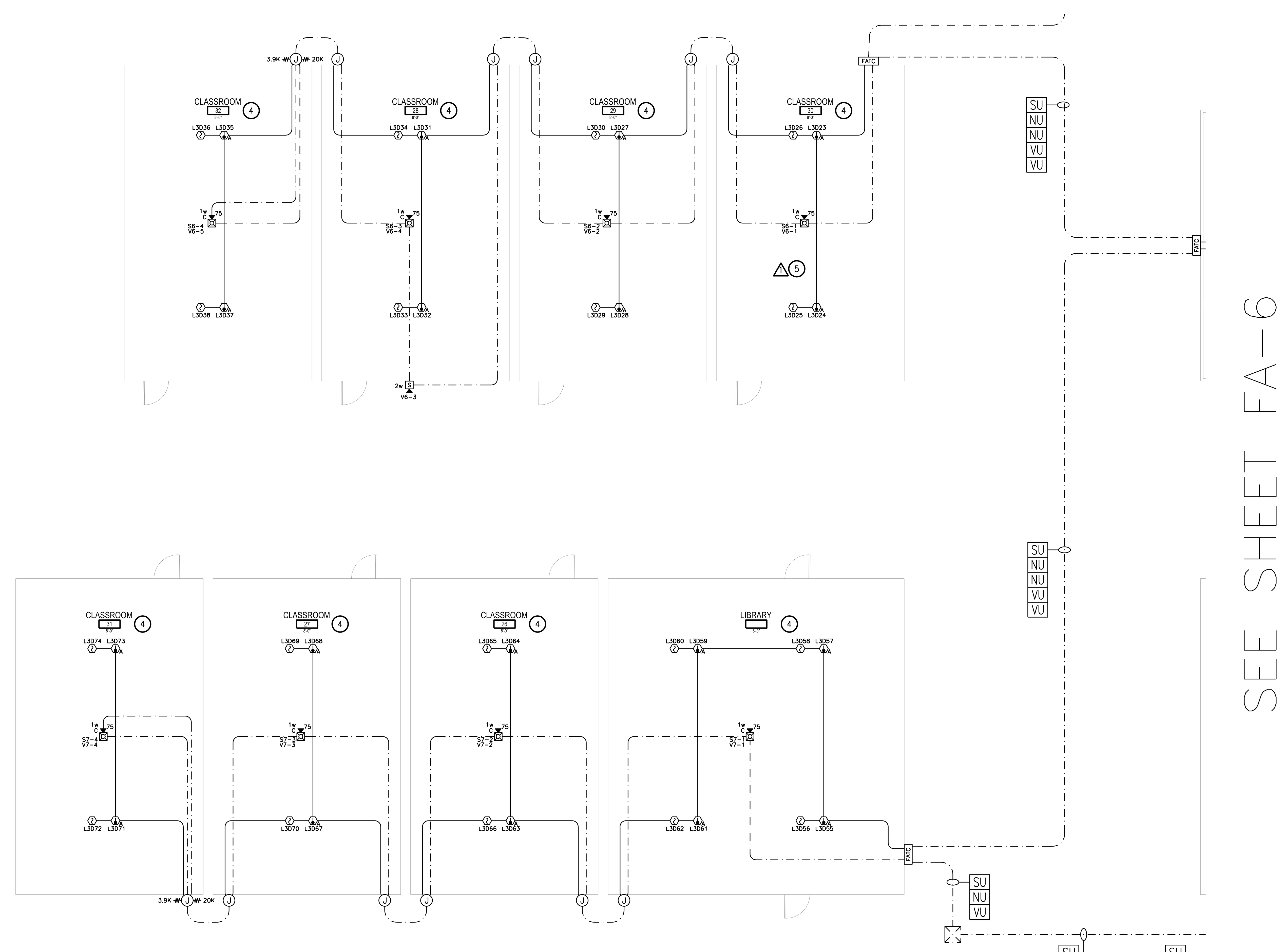
REGISTERED PROFESSIONAL ENGINEER 2151 ELECTRICAL STATE OF CALIFORNIA

SHEET NOTES

1. HVAC UNITS ARE LESS THAN 2,000 CFM AND DON'T SERVE COMMON AREAS THEREFORE FAN SHUTDOWN ISN'T REQUIRED.
2. HVAC UNITS CONTAIN NATURAL GAS FURNACES THEREFORE CARBON MONOXIDE (CO) DETECTION IS PROVIDED.
3. VERIFY THAT SMOKE DETECTOR LOCATIONS COMPLY WITH SHEET FA-2 GENERAL NOTE 15, LIGHTING FIXTURES, AND OTHER MECHANICAL OBSTRUCTIONS (TYPICAL).
4. HVAC UNITS ARE HEAT PUMPS AND DON'T CONTAIN NATURAL GAS FURNACES THEREFORE CARBON MONOXIDE (CO) DETECTION ISN'T REQUIRED.
5. SEE SHEET FA-1 FOR SLC & NAC DEVICE LABEL SCHEMA.



Classrooms 26 through 32
SCALE: 1/8" = 1'-0"

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AC ___ FLS mnr SS ___
DATE: 08/09/2018

ENGINEER: GREG ALAVEZOS
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1822 NATIONAL AVENUE
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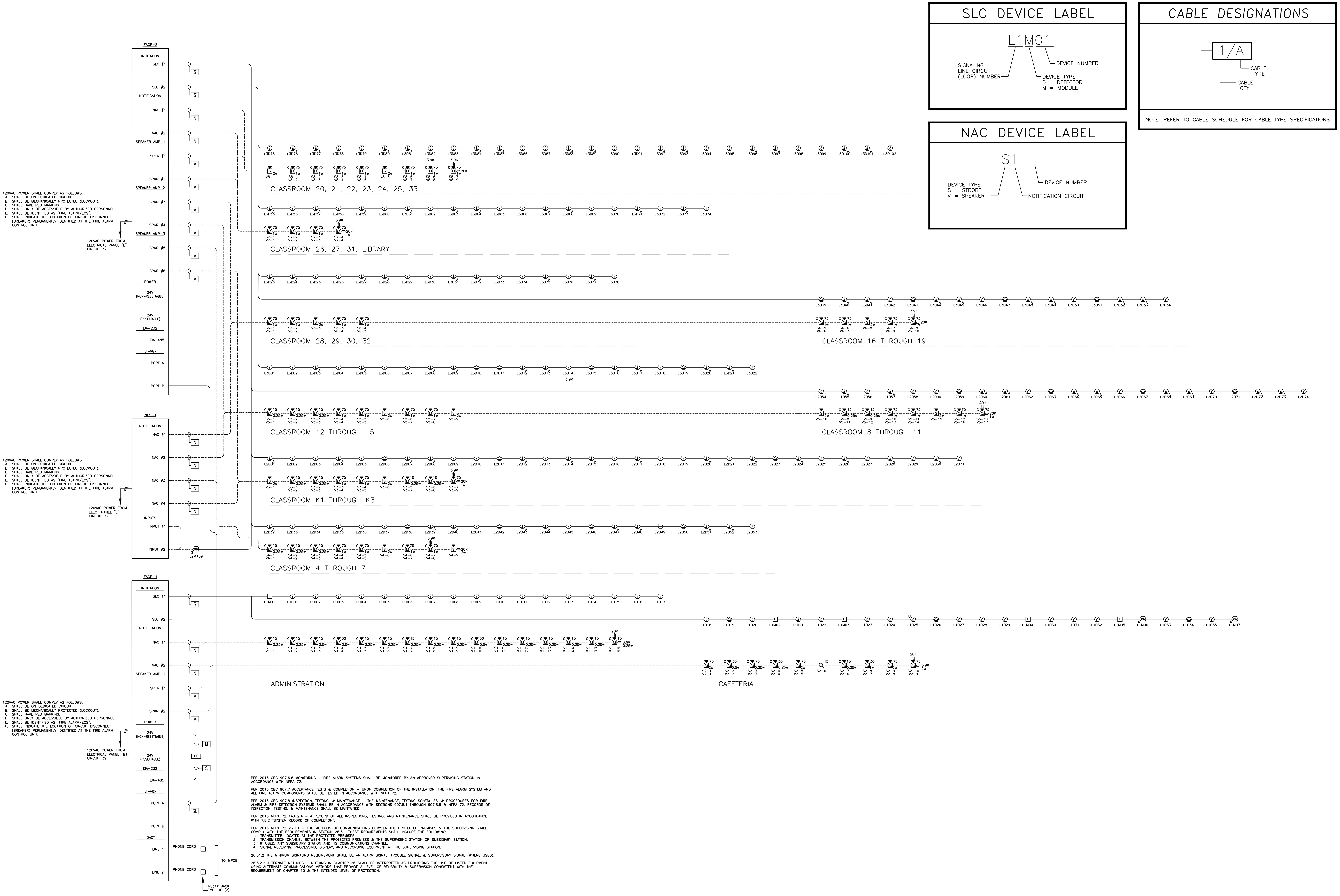
ELITE ALARM INC ACO # **7474**
NICET LEVEL 3 # **90089**

REV #	DATE
	-

DATE SUBMITTED: **4/16/18**
PROJECT #: **C18-0030**
SHEET #: **FA-7** OF SHEETS
FIRE ALARM SYSTEM CLASSROOMS



PER 2016 CBC 907.6.6 MONITORING – FIRE ALARM SYSTEMS SHALL BE MONITORED BY AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH NFPA 72.

PER 2016 CBC 907.7 ACCEPTANCE TESTS & COMPLETION – UPON COMPLETION OF THE INSTALLATION, THE FIRE ALARM SYSTEM AND ALL FIRE ALARM COMPONENTS SHALL BE TESTED IN ACCORDANCE WITH NFPA 72.

PER 2016 CBC 907.8 INSPECTION, TESTING, & MAINTENANCE – THE MAINTENANCE, TESTING SCHEDULES, & PROCEDURES FOR FIRE ALARM & FIRE DETECTION SYSTEMS SHALL BE IN ACCORDANCE WITH SECTIONS 907.8.1 THROUGH 907.8.5 & NFPA 72. RECORDS OF INSPECTION, TESTING, & MAINTENANCE SHALL BE MAINTAINED.

PER 2016 NFPA 72 14.6.2.4 – A RECORD OF ALL INSPECTIONS, TESTING, AND MAINTENANCE SHALL BE PROVIDED IN ACCORDANCE WITH 7.8.2 "SYSTEM RECORD OF COMPLETION".

PER 2016 NFPA 72 26.1.1 – THE METHODS OF COMMUNICATIONS BETWEEN THE PROTECTED PREMISES & THE SUPERVISING SHALL COMPLY WITH THE REQUIREMENTS IN SECTION 26.6. THESE REQUIREMENTS SHALL INCLUDE THE FOLLOWING:
1. TRANSMITTER LOCATED AT THE PROTECTED PREMISES.
2. TRANSMISSION CHANNEL BETWEEN THE PROTECTED PREMISES & THE SUPERVISING STATION OR SUBSIDIARY STATION.
3. IF USED, ANY SUBSIDIARY STATION AND ITS COMMUNICATIONS CHANNEL.
4. SIGNAL RECEIVING, PROCESSING, DISPLAY, AND RECORDING EQUIPMENT AT THE SUPERVISING STATION.

26.61.2 THE MINIMUM SIGNALING REQUIREMENT SHALL BE AN ALARM SIGNAL, TROUBLE SIGNAL, & SUPERVISORY SIGNAL (WHERE USED).

26.6.2.2 ALTERNATE METHODS – NOTHING IN CHAPTER 26 SHALL BE INTERPRETED AS PROHIBITING THE USE OF LISTED EQUIPMENT USING ALTERNATE COMMUNICATIONS METHODS THAT PROVIDE A LEVEL OF RELIABILITY & SUPERVISION CONSISTENT WITH THE REQUIREMENT OF CHAPTER 10 & THE INTENDED LEVEL OF PROTECTION.

FIRE ALARM SYSTEM RISER DIAGRAMS

SCALE: NO SCALE

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

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REV #	DATE
	-

DATE SUBMITTED: 4/16/18
PROJECT #: C18-0030
SHEET #: FA-8 OF SHEETS
FIRE ALARM SYSTEM RISER DIAGRAM

FIRE ALARM OPERATION MATRIX

	ACTIVATE ALARM AT FACP	ACTIVATE ALARM AT REMOTE ANNUNCIATOR	SEND ALARM OFF-SITE VIA COMMUNICATOR	ACTIVATE TROUBLE SIGNAL AT FACP	ACTIVATE TROUBLE SIGNAL AT REMOTE ANNUNCIATOR	SEND TROUBLE SIGNAL OFF-SITE VIA COMMUNICATOR	ACTIVATE SUPERVISORY SIGNAL AT FACP	ACTIVATE SUPERVISORY SIGNAL AT REMOTE ANNUNCIATOR	SEND SUPERVISORY SIGNAL OFF-SITE VIA COMMUNICATOR	ACTIVATE TEMPORAL 3 AUDIBLE & VISIBLE SIGNALS	ACTIVATE TEMPORAL 4 AUDIBLE & VISIBLE SIGNALS	SHUTDOWN HVAC UNITS	ACTIVATE BATTERY BACK-UP	DEACTIVATE AUDIBLE SIGNALS	DEACTIVATE VISIBLE SIGNALS	SYSTEM NORMAL
MANUAL PULL STATION	X	X	X							X						
SMOKE DETECTOR	X	X	X							X		X				
HEAT DETECTOR	X	X	X							X		X				
CARBON MONOXIDE DETECTOR	X	X	X								X					
WIRING CONDITIONS:																
SIGNALING LINE CIRCUIT (SLC) -																
WIRE-TO-WIRE SHORT				X	X	X										
SINGLE OPEN				X	X	X										
SINGLE GROUND				X	X	X										
INITIATING DEVICE CIRCUIT (IDC) -																
WIRE-TO-WIRE SHORT	X	X	X							X						
SINGLE OPEN				X	X	X										
SINGLE GROUND				X	X	X										
NOTIFICATION APPLIANCE CIRCUIT (NAC) -																
WIRE-TO-WIRE SHORT				X	X	X										
SINGLE OPEN				X	X	X										
SINGLE GROUND				X	X	X										
LOSS OF 120VAC POWER				X	X	X							X			
SIGNAL SILENCE														X		
RESET FACP														X	X	X

BATTERY CALCULATION

E3 FIRE ALARM CONTROL PANEL (FACP-1)

EQUIPMENT	QUANTITY	SUPERVISORY CURRENT (IN AMPS): UNIT	SUPERVISORY CURRENT (IN AMPS): TOTAL	ALARM CURRENT (IN AMPS): UNIT	ALARM CURRENT (IN AMPS): TOTAL
LCD-E3 LDC DISPLAY	1	0.0240	0.0240	0.0280	0.0280
ILMB-E3 MAIN BOARD	1	0.0810	0.0810	0.1500	0.1500
PM-9 POWER SUPPLY	1	0.0500	0.0500	0.0500	0.0500
IN-VGX VOICE GATEWAY	2	0.1500	0.3000	0.0500	0.1000
AM-50-70 AUDIO AMPLIFIER	1	0.0490	0.0490	0.1500	0.1500
NGA NETWORK GRAPHIC ANNUNCIATOR	1	0.2000	0.2000	0.2000	0.2000
INCC-MIC REMOTE MIC	1	0.0010	0.0010	0.0010	0.0010
DACT-E3 DIALER	1	0.0180	0.0180	0.0180	0.0180
NOTIFICATION CIRCUIT S1	1			1.0063	1.0063
NOTIFICATION CIRCUIT S2	1			1.0490	1.0490
SUB-TOTALS (IN AMPS):			0.7230		2.7523
TIME FACTOR: 24 HOUR STANDBY			X 24		
15 MINUTES IN ALARM					X 0.250
SUB-TOTALS (IN AMPHOURS):			17.3520		0.6881
STANDBY AMPHOURS	17.3520				
ALARM AMPHOURS	* 0.6881				
SYSTEM AMPHOURS	= 18.0401				
+10% DERATING	* 1.8040				
TOTAL AMPHOURS REQUIRED	= 19.8441				
TOTAL AMPHOURS PROVIDED	26.00	(2) 12VDC 26AH BATTERIES			
LESS AMPHOURS REQUIRED	- 19.8441				
AVAILABLE SPARE AMPHOUR CAPACITY	= 6.16				

BATTERY CALCULATION

E3 FIRE ALARM CONTROL PANEL (FACP-2)

EQUIPMENT	QUANTITY	SUPERVISORY CURRENT (IN AMPS): UNIT	SUPERVISORY CURRENT (IN AMPS): TOTAL	ALARM CURRENT (IN AMPS): UNIT	ALARM CURRENT (IN AMPS): TOTAL
ILMB-E3 MAIN BOARD	1	0.0810	0.0810	0.1500	0.1500
PM-9 POWER SUPPLY	1	0.0500	0.0500	0.0500	0.0500
IN-VGX VOICE GATEWAY	1	0.1500	0.1500	0.0500	0.0500
AM-50-70 AUDIO AMPLIFIER	3	0.0490	0.1470	0.1500	0.4500
NOTIFICATION CIRCUIT S3	1			0.6480	0.6480
NOTIFICATION CIRCUIT S4	1			0.7240	0.7240
SUB-TOTALS (IN AMPS)			0.4280		2.0720
TIME FACTOR: 24 HOUR STANDBY			X 24		
15 MINUTES IN ALARM					X 0.250
SUB-TOTALS (IN AMPHOURS):			10.2720		0.5180
STANDBY AMPHOURS	10.2720				
ALARM AMPHOURS	* 0.5180				
SYSTEM AMPHOURS	= 10.7900				
+10% DERATING	* 1.0790				
TOTAL AMPHOURS REQUIRED	= 11.8690				
TOTAL AMPHOURS PROVIDED	18.00	(2) 12VDC 18AH BATTERIES			
LESS AMPHOURS REQUIRED	- 11.8690				
AVAILABLE SPARE AMPHOUR CAPACITY	= 6.13				

BATTERY CALCULATION

NAC POWER SUPPLY (NPS-1)

EQUIPMENT	QUANTITY	SUPERVISORY CURRENT (IN AMPS): UNIT	SUPERVISORY CURRENT (IN AMPS): TOTAL	ALARM CURRENT (IN AMPS): UNIT	ALARM CURRENT (IN AMPS): TOTAL
HPFF8 REMOTE POWER SUPPLY	1	0.0750	0.0750	0.2060	0.2060
NOTIFICATION CIRCUIT S5	1			1.3120	1.3120
NOTIFICATION CIRCUIT S6	1			1.0880	1.0880
NOTIFICATION CIRCUIT S7	1			0.5440	0.5440
NOTIFICATION CIRCUIT S8	1			0.9520	0.9520
SUB-TOTALS (IN AMPS)			0.0750		4.1020
TIME FACTOR: 24 HOUR STANDBY			X 24		
15 MINUTES IN ALARM					X 0.250
SUB-TOTALS (IN AMPHOURS):			1.8000		1.0255
STANDBY AMPHOURS	1.8000				
ALARM AMPHOURS	* 1.0255				
SYSTEM AMPHOURS	= 2.8255				
+10% DERATING	* 0.2826				
TOTAL AMPHOURS REQUIRED	= 3.1081				
TOTAL AMPHOURS PROVIDED	7.00	(2) 12VDC 7AH BATTERIES			
LESS AMPHOURS REQUIRED	- 3.1081				
AVAILABLE SPARE AMPHOUR CAPACITY	= 3.89				

SPEAKER VOLTAGE DROP CALCULATIONS

Volt Drop Common Parameters

Volts	70.7	Volts
Wire Size	14	AWG
Wire Resistance	3.26	ohm/Kft

Type	INDOOR: Wall Mount 1/4 W	1/2 W	1W	2W	OUTDOOR: Wall Mount 2W	4W	8W	15W	CIRCUIT LENGTH: Total Watts	Max Length	Actual Length
Wattage Tap											
V1	13	3							4.75	19126	290
V2	2	2	1	4					10.5	8652	260
V3	4		3		2				8	11356	245
V4	3		4		2				8.75	10382	380
V5	5		8		4				17.25	5266	675
V6			8		2				12	7571	688
V7			3		1				5	18169	570
V8			7		2				11	8259	910

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S1"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S1-1	0.060	45	1.006	12	6530	0.00201	0.1820	23.8180
S1-2	0.060	20	0.946	12	6530	0.00201	0.0761	23.7419
S1-3	0.060	20	0.886	12	6530	0.00201	0.0713	23.6706
S1-4	0.083	25	0.826	12	6530	0.00201	0.0830	23.5876
S1-5	0.060	20	0.743	12	6530	0.00201	0.0598	23.5278
S1-6	0.060	15	0.683	12	6530	0.00201	0.0412	23.4866
S1-7	0.060	15	0.623	12	6530	0.00201	0.0376	23.4490
S1-8	0.060	15	0.563	12	6530	0.00201	0.0340	23.4151
S1-9	0.060	10	0.503	12	6530	0.00201	0.0202	23.3948
S1-10	0.083	15	0.443	12	6530	0.00201	0.0267	23.3681
S1-11	0.060	20	0.360	12	6530	0.00201	0.0289	23.3392
S1-12	0.060	15	0.300	12	6530	0.00201	0.0181	23.3211
S1-13	0.060	10	0.240	12	6530	0.00201	0.0096	23.3114
S1-14	0.060	10	0.180	12	6530	0.00201	0.0072	23.3042
S1-15	0.060	20	0.120	12	6530	0.00201	0.0096	23.2945
S1-16	0.060	15	0.060	12	6530	0.00201	0.0036	23.2909

Total Cond. Lgt. (ft) 290
Total Voltage Drop **0.709** VDC
Total Percentage Drop in Circuit **2.954** %
Voltage at Last Device **23.29** VDC

Above calculations are based on UL Standard 1971
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S2"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S2-1	0.136	30	1.049	12	6530	0.00201	0.1265	23.8735
S2-2	0.083	20	0.913	12	6530	0.00201	0.0734	23.8001
S2-3	0.136	15	0.830	12	6530	0.00201	0.0500	23.7500
S2-4	0.083	20	0.694	12	6530	0.00201	0.0558	23.6942
S2-5	0.136	10	0.611	12	6530	0.00201	0.0246	23.6697
S2-6	0.060	15	0.475	12	6530	0.00201	0.0286	23.6410
S2-7	0.060	25	0.415	12	6530	0.00201	0.0417	23.5993
S2-8	0.083	30	0.355	12	6530	0.00201	0.0428	23.5565
S2-9	0.136	50	0.272	12	6530	0.00201	0.0547	23.5018
S2-10	0.136	45	0.136	12	6530	0.00201	0.0246	23.4772

Total Cond. Lgt. (ft) 260
Total Voltage Drop **0.523** VDC
Total Percentage Drop in Circuit **2.178** %
Voltage at Last Device **23.48** VDC

Above calculations are based on UL Standard 1971.
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S3"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S3-1	0.060	80	0.648	12	6530	0.00201	0.2084	23.7916
S3-2	0.060	15	0.588	12	6530	0.00201	0.0355	23.7561
S3-3	0.136	30	0.528	12	6530	0.00201	0.0637	23.6925
S3-4	0.136	35	0.392	12	6530	0.00201	0.0552	23.6373
S3-5	0.060	45	0.256	12	6530	0.00201	0.0463	23.5910
S3-6	0.060	10	0.196	12	6530	0.00201	0.0079	23.5831
S3-7	0.136	30	0.136	12	6530	0.00201	0.0164	23.5667

Total Cond. Lgt. (ft) 245
Total Voltage Drop **0.433** VDC
Total Percentage Drop in Circuit **1.805** %
Voltage at Last Device **23.57** VDC

Above calculations are based on UL Standard 1971.
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S4"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S4-1	0.060	165	0.724	12	6530	0.00201	0.4802	23.5198
S4-2	0.060	15	0.664	12	6530	0.00201	0.0400	23.4797
S4-3	0.060	15	0.604	12	6530	0.00201	0.0364	23.4433
S4-4	0.136	40	0.544	12	6530	0.00201	0.0875	23.3558
S4-5	0.136	30	0.408	12	6530	0.00201	0.0492	23.3066
S4-6	0.136	70	0.272	12	6530	0.00201	0.0765	23.2301
S4-7	0.136	30	0.136	12	6530	0.00201	0.0164	23.2137

Total Cond. Lgt. (ft) 365
Total Voltage Drop **0.786** VDC
Total Percentage Drop in Circuit **3.276** %
Voltage at Last Device **23.21** VDC

Above calculations are based on UL Standard 1971.
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S5"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S5-1	0.060	15	1.312	12	6530	0.00201	0.0791	23.9209
S5-2	0.060	15	1.252	12	6530	0.00201	0.0755	23.8454
S5-3	0.136	15	1.192	12	6530	0.00201	0.0719	23.7735
S5-4	0.136	35	1.056	12	6530	0.00201	0.1486	23.6249
S5-5	0.060	30	0.920	12	6530	0.00201	0.1110	23.5140
S5-6	0.060	70	0.860	12	6530	0.00201	0.2420	23.2720
S5-7	0.136	30	0.800	12	6530	0.00201	0.0965	23.1755
S5-8	0.060	295	0.664	12	6530	0.00201	0.7874	22.3881
S5-9	0.060	15	0.604	12	6530	0.00201	0.0364	22.3516
S5-10	0.136	25	0.544	12	6530	0.00201	0.0547	22.2970
S5-11	0.136	30	0.408	12	6530	0.00201	0.0492	22.2478
S5-12	0.136	70	0.272	12	6530	0.00201	0.0765	22.1712
S5-13	0.136	30	0.136	12	6530	0.00201	0.0164	22.1548

Total Cond. Lgt. (ft) 675
Total Voltage Drop **1.845** VDC
Total Percentage Drop in Circuit **7.688** %
Voltage at Last Device **22.15** VDC

Above calculations are based on UL Standard 1971.
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S6"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S6-1	0.136	155	1.088	12	6530	0.00201	0.6779	23.3221
S6-2	0.136	80	0.952	12	6530	0.00201	0.3062	23.0159
S6-3	0.136	120	0.816	12	6530	0.00201	0.3936	22.6223
S6-4	0.136	80	0.680	12	6530	0.00201	0.2187	22.4036
S6-5	0.136	120	0.544	12	6530	0.00201	0.2624	22.1412
S6-6	0.136	30	0.408	12	6530	0.00201	0.0492	22.0919
S6-7	0.136	70	0.272	12	6530	0.00201	0.0765	22.0154
S6-8	0.136	30	0.136	12	6530	0.00201	0.0164	21.9990

Total Cond. Lgt. (ft) 685
Total Voltage Drop **2.001** VDC
Total Percentage Drop in Circuit **8.337** %
Voltage at Last Device **22.00** VDC

Above calculations are based on UL Standard 1971.
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S7"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S7-1	0.136	330	0.544	12	6530	0.00201	0.7217	23.2783
S7-2	0.136	80	0.408	12	6530	0.00201	0.1312	23.1471
S7-3	0.136	80	0.272	12	6530	0.00201	0.0875	23.0596
S7-4	0.136	80	0.136	12	6530	0.00201	0.0437	23.0159

Total Cond. Lgt. (ft) 570
Total Voltage Drop **0.984** VDC
Total Percentage Drop in Circuit **4.100** %
Voltage at Last Device **23.02** VDC

Above calculations are based on UL Standard 1971.
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

POINT TO POINT VOLTAGE DROP CALCULATION

Location: Building:
Ckt. Desc: NAC Circuit "S8"

Circuit Reference	Unit Amp.	Cond. lgt. (ft)	Total Amp.	AWG Size	Circ. Mills	UL Starting Voltage: Ohms Res. per foot	UL Starting Voltage: Volt. Drop	24 VDC Voltage at Device
S8-1	0.136	395	0.952	12	6530	0.00201	1.5117	22.4883
S8-2	0.136	70	0.816	12	6530	0.00201	0.2296	22.2587
S8-3	0.136	80	0.680	12	6530	0.00201	0.2187	22.0400
S8-4	0.136	80	0.544	12	6530	0.00201	0.1750	21.8651
S8-5	0.136	80	0.408	12	6530	0.00201	0.1312	21.7338
S8-6	0.136	80	0.272	12	6530	0.00201	0.0875	21.6464
S8-7	0.136	120	0.136	12	6530	0.00201	0.0656	21.5808

Total Cond. Lgt. (ft) 905
Total Voltage Drop **2.419** VDC
Total Percentage Drop in Circuit **10.080** %
Voltage at Last Device **21.58** VDC

Above calculations are based on UL Standard 1971.
The Regulated Voltage Range is 16.0 - 33.0 VDC/FWR
*RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units).
For additional information review the device installation instructions.

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

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REGISTERED PROFESSIONAL ENGINEER — 17197 — ELECTRICAL — STATE OF CALIFORNIA

EKC Enterprises, Inc.
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Phone: (559) 438-0330
Fax: (559) 438-0333

FILE NUMBER: 20-30
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
02-116790
AC. - FLS mnr SS. -
DATE: 08/09/2018

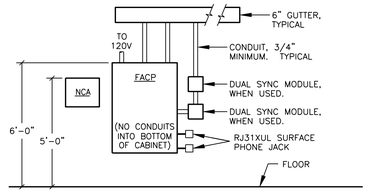
ENGINEER: GREG ALAVEZOS
NICET: #90089
CADD BY: GREG ALAVEZOS
CUSTOMER:
MADERA UNIFIED SCHOOL DIST
1902 HOWARD ROAD
MADERA, CA 93637
PHONE: 559-675-4500

PROJECT: FIRE ALARM SYSTEM
JOHN ADAMS ELEMENTARY
FIRE ALARM REPLACEMENT
1922 NATIONAL AVENUE
MADERA, CA 93637

C-10 LICENSE # 916095
ELITE ALARM INC ACO # 7474
NICET LEVEL 3 # 90089

REV #	DATE
	-

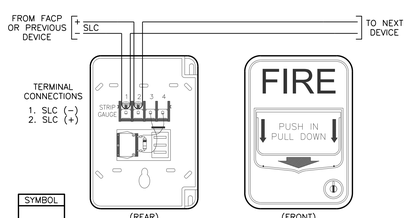
DATE SUBMITTED: 4/16/18
PROJECT #: C18-0030
SHEET #: FA-9 OF SHEETS
FIRE ALARM SYSTEM OPERATION & CALCS



NOTES: 1. ELEVATION IS GENERIC IN NATURE.
2. ELEVATION SHOWS SURFACE MOUNTED CABINETS AND EXPOSED RACEWAY.

ELEVATION – FIRE ALARM PANELS

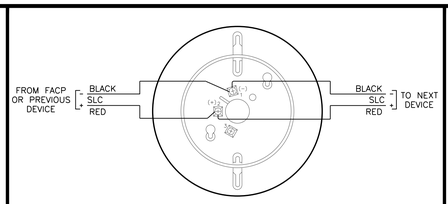
SCALE: NO SCALE



SYMBOL

WIRING DIAGRAM – MS-7ASF PULL STATION

SCALE: NO SCALE

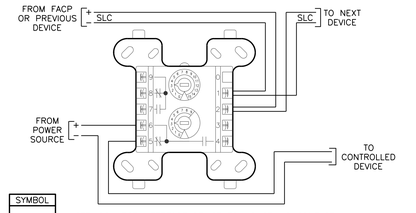


SYMBOL

NOTE:
REFER TO MANUFACTURERS DOCUMENTATION FOR COMPLETE INSTALLATION INSTRUCTIONS.

WIRING DIAGRAM – B210LP DETECTOR BASE

SCALE: NO SCALE



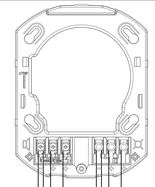
SYMBOL

NOTE: CONNECT INTERFACE DEVICE TO NO OR NC CONTACT WIRING AS REQUIRED.

WIRING DIAGRAM – AOM-2RF RELAY MODULE

SCALE: NO SCALE

SPEAKER TAP CHART		
POSITION	25V	70V
A	2W	–
B	1W	–
C	0.5W	–
D	0.25W	2W
E	0.125W	1W
F	–	0.5W
G	–	0.25W
H	–	0.125W

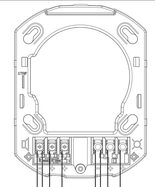


SYMBOL

WIRING DIAGRAM – WALL SPEAKER & STROBE

SCALE: NO SCALE

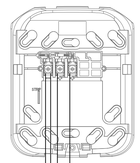
SPEAKER TAP CHART		
POSITION	25V	70V
A	2W	–
B	1W	–
C	0.5W	–
D	0.25W	2W
E	0.125W	1W
F	–	0.5W
G	–	0.25W
H	–	0.125W



SYMBOL

WIRING DIAGRAM – CEILING SPEAKER & STROBE

SCALE: NO SCALE

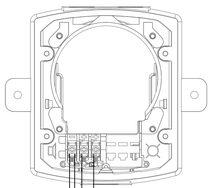


SYMBOL

WIRING DIAGRAM – CEILING STROBE

SCALE: NO SCALE

SPEAKER TAP CHART		
POSITION	25V	70V
A	8W	–
B	4W	–
C	2W	–
D	1W	8W
E	0.5W	4W
F	0.25W	2W
G	0.125W	1W
H	–	0.5W
I	–	0.25W
J	–	0.125W



SYMBOL

WIRING DIAGRAM – OUTDOOR SPEAKER

SCALE: NO SCALE

THESE DRAWINGS HAVE BEEN REVIEWED AND DO CONFORM TO THE APPLICABLE CODES AND STANDARDS AS STATED ON SHEET FA-1 & FA-2.

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REGISTERED PROFESSIONAL ENGINEER — GREGORY T. GOETZ — 13151 — C10-916095 — ELECTRICAL — STATE OF CALIFORNIA

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Phone: (559) 438-0330
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FILE NUMBER: 20-30

IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
02-116790
AC. – FLS mnr SS –
DATE: 08/09/2018

ENGINEER: GREG ALAVEZOS
NICET: #90089
CADD BY: GREG ALAVEZOS
CUSTOMER:
MADERA UNIFIED SCHOOL DIST
1902 HOWARD ROAD
MADERA, CA 93637
PHONE: 559-675-4500

PROJECT: FIRE ALARM SYSTEM
JOHN ADAMS ELEMENTARY
FIRE ALARM REPLACEMENT
1822 NATIONAL AVENUE
MADERA, CA 93637

C-10 LICENSE # 916095
ELITE ALARM INC ACO # 7474
NICET LEVEL 3 # 90089

REV #	DATE
	-

DATE SUBMITTED: 4/16/18

PROJECT #: C18-0030

SHEET #: FA-10
OF SHEETS

FIRE ALARM SYSTEM DETAILS SHEET