LAKEWOOD ELEMENTARY SCHOOL

1100 N. Ham Ln., Lodi, Ca 95242

FIRE ALARM REPLACEMENT PROJECT

CODE INFORMATION

THE INTENT OF THE CONSTRUCTION DOCUMENTS IS REPLACE EQUIPMENT IN ACCORDANCE WITH THE CBC 2016. SHOULD ANY CONDITION DEVELOP NOT COVERED BY THE CONSTRUCTION DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH THE CBC 2016, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.

ANCHORAGE AND SUPPORTS OF ALL EQUIPMENT TO BE INSTALLED, AS A PART OF THIS PROJECT SHALL BE DETAILED ON CONSTRUCTION DOCUMENTS, EXCEPT THOSE EXEMPT BY 2016 CBC SECTION 1616A.1.18. EQUIPMENT SUPPORTS AND ANCHORAGE SHALL BE APPROVED BY THE APPROPRIATE DESIGN PROFESSIONAL OF RECORD AND DSA AS A PART OF FIELD REVIEWS/OBSERVATIONS. THE INSPECTOR OF RECORD (IOR) SHALL ASSURE THAT THE ABOVE REQUIREMENTS ARE ENFORCED.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

2016 CALIFORNIA ADMINISTRATIVE CODE (CAC)
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2016 CALIFORNIA BUILDING CODE (CBC)
PART 2, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL BUILDING CODE (IBC)

2016 CALIFORNIA ELECTRICAL CODE (CEC)
PART 3, TITLE 24, CCR
BASED ON THE 2014 NATIONAL ELECTRICAL CODE (NEC)

2016 CALIFORNIA MECHANICAL CODE (CMC)
PART 4, TITLE 24, CCR
BASED ON THE 2015 UNIFORM MECHANICAL CODE (UMC)

2016 CALIFORNIA PLUMBING CODE (CPC)
PART 5, TITLE 24, CCR
BASED ON THE 2015 UNIFORM PLUMBING CODE (UPC)

2016 CALIFORNIA FIRE CODE (CFC)
PART 9, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL FIRE CODE (IFC)

2016 NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE

COMPLIANCE WITH 2016 CALIFORNIA FIRE CODE, CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.

FIRE ALARM SCOPE OF WORK

PROVIDE A MANUALLY AND AUTOMATICALLY ACTIVATED FIRE ALARM SYSTEM INCLUDING FACP, VOICE AMPLIFIERS, POWER SUPPLIES, ANNOUNCING MICROPHONE, INITIATION, NOTIFICATION, CONTROL AND MONITORING DEVICES AS SHOWN ON PLANS AND SPECIFICATIONS.

FIRE ALARM DESCRIPTION

THIS PROJECT IS TO REPLACE THE EXISTING FIRE ALARM PANELS, INITIATING DEVICES, NOTIFICATION DEVICES, MODULES, POWER SUPPLIES AND REMOTE ANNUNCIATOR PANEL WITH A NEW GAMEWELL E3 FIRE ALARM SYSTEM WITH EMERGENCY VOICE EVACUATION.

ALL EXISTING PATHWAY WILL BE RE-USED WHERE POSSIBLE AND NEW WHERE REQUIRED. NEW PATHWAY WILL BE PROVIDED IN AREAS WHERE CABLE CAN NOT BE CONCEALED ABOVE CEILING.

CABLE ABOVE CEILING WHEN NOT IN EXISTING CONDUIT WILL BE FREE AIR AND SUPPORTED EVERY 48" WITH J-HOOKS, PAINTED RED.

NEW DEVICE BOXES WILL BE REQUIRED AT ALL NEW DEVICES. WHERE EXISTING DEVICE BOXES ARE LOCATED AND A DEVICE IS NOT REQUIRED, THEN PROVIDE COVER PLATES. REMOVE EXISTING DEVICE BOXES WHEN ADDING A NEW DEVICE.

DEMOLISH ALL OLD CABLE, FIRE ALARM COMPONENTS AND BACK BOXES FROM SITE.

ALL CABLE AND COMPONENTS WILL BE NEW.

THIS PROJECT IS TO REPLACE EXISTING FIRE ALARM HEAD END UNIT AND ALL ASSOCIATED DEVICES.

FIRE ALARM SYSTEM: CLASS B
IDC: CLASS B
SLC CIRCUIT: CLASS B
NOTIFICATION CIRCUIT: CLASS B

PROJECT TEAM

OWNER

LODI UNIFIED SCHOOL DISTRICT
1305 E. VINE ST.
LODI, CA 95240

CONTACT: LEONARD KAHN (209)331-7225
E-MAIL CONTACT: VBRUM@LODIUSD.NET

ELECTRICAL ENGINEER:

THE ENGINEERING ENTERPRISE
1125 HIGH ST.
AUBURN, CA 95603

CONTACT: SCOTT WHEELER: 530-305-927-5784
FAX: 530-886-8557
EMAIL: SCOTT@ENGENT.COM

CONTACT: JESSE WHEELER: 530-927-5630
FAX: 530-886-8557
EMAIL: JESSE.WHEELER@ENGENT.COM

DRAWING INDEX

SHEET NO.	SHEET NAME	SCHEMATIC DESIGN	DESIGN DEVELOPMENT	DSA SUBMISSION
G0.0	COVER SHEET			•
E0.00	SYMBOLS, LEGENDS, NOTES, & LEGENDS			•
E0.01	FIRE ALARM MATRIX, SCHEDULES & NOTES			•
E1.00	SITE PLAN			•
E2.00	FIRE ALARM PLAN - A, B & C			•
E2.01	FIRE ALARM PLAN - D, E & PORTABLES F, G1 & G2			•
E3.00	FIRE ALARM RISER			•
E4.00	FIRE ALARM CALCULATIONS			•
ED1.00	FIRE ALARM DEMO PLAN - SITE PLAN			•
ED1.01	FIRE ALARM DEMO PLAN - A, B & C			•
ED1.02	FIRE ALARM DEMO PLAN - D, E & PORTABLES F, G1 & G2			•

EXISTING BUILDING DATA

CAMPUS BUILDING SQUARE FOOTAGE:	34,241
OCCUPANCY GROUP:	E: K-6
FIRE SPRINKLER:	BLDGS.D
YEAR CONSTRUCTED:	1965
FLOOR AREAS:	NO PROPOSED CHANGE

DSA ANCHORAGE AND BRACING NOTES

DEFERRED APPROVALS

N/A

NOTES

1. THE FIRE ALARM SYSTEM SHALL CONFORM TO 2016 CALIFORNIA ELECTRICAL CODE (CEC) ARTICLE 760 AND 2016 CALIFORNIA FIRE CODE (CFC) SECTION 907.
2. PROVIDE CALIFORNIA STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM INCLUDING MANUFACTURER CUT SHEETS FOR REVIEW.
3. BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION THE INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE DSA PROJECT INSPECTOR TO THE EFFECT THAT THE SYSTEM HAS BEEN INSTALLED AND TESTED IN ACCORDANCE WITH THE (2016) NFPA 72 SECTION 14.4.1.
4. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE DSA PROJECT INSPECTOR.
5. PROVIDE A RECORD OF COMPLETION PER CBC 907.7.2.
6. AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AND CBC 907.6.5.2. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX OR UUIS BY UL OR SHALL MEET THE REQUIREMENTS OF FM STANDARD 3011.
7. TEST, INSPECTION AND MAINTENANCE SHALL COMPLY WITH NFPA 72 CHAPTER 14 REQUIREMENTS.
8. EACH BUILDING TO BE A SEPARATE SPEAKER ZONE. (CFC, 907.6.3).
9. THE EXISTING SYSTEM SHALL REMAIN IN SERVICE UNTIL THE NEW SYSTEM IS INSTALLED OR THAT A FIRE WATCH IN COMPLIANCE WITH THE CALIFORNIA FIRE CODE WILL BE PROVIDED.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP. 02-118025 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 02/27/2020

IDENTIFIC
DIV. OF THE S
APPL. # 02-1
REVIVEWED FOR
SS_____ FLS_____ ACS_____
DATE:_____

The Engineering Enterprise
CONSULTING ENGINEERS
1125 HIGH STREET
AUBURN, CA 95603
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015497
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 12" = 1'-0"
DATE: 2019.12.20
TITLE: COVER SHEET
DRAWING NO. G0.0

FIRE ALARM SYSTEM MATRIX

RESULT OF OPERATION	SMOKE DETECTOR	CO SMOKE DETECTOR	HEAT DETECTOR	DUCT DETECTOR	PULL STATION	WATERFLOW	TAMPER	SYSTEM RESET	SIGNAL SILENCE	OPEN/SHORT	POWER LOSS
FACP ALARM	X		X		X	X					
ANNUNCIATE ALARM	X		X		X	X					
OFF SITE REPORTING ALARM	X		X		X	X					
FACP TROUBLE										X	X
ANNUNCIATE TROUBLE										X	X
OFF SITE REPORTING TROUBLE										X	X
AUDIBLE ALARM	X		X		X	X					
VISUAL ALARM	X		X		X	X					
FACP SUPERVISORY		X		X			X				
ANNUNCIATE SUPERVISORY		X		X			X				
OFF SITE REPORTING SUPERVISORY		X		X			X				
SOUNDER BASE		X									
DEACTIVATE VISUALS								X			
DEACTIVATE AUDIBLES								X			
HVAC SHUTDOWN			X								
SYSTEM NORMAL							X				
DAMPER CLOSURE			X								
AUDIO RACK SHUTDOWN	X		X		X	X					

FIRE ALARM SYSTEM CABLE SCHEDULE

REQUIRED CABLES	CABLE TAG	CABLE	NO. OF CONDUCTORS	COLOR	AWG	CABLE USE
X	A	GENESIS	2(1PR)	RED/BLACK	#18	BUILDING INITIATION (SLC)
X	B	GENESIS	2(1PR)	RED/BLACK	#12	NOTIFICATION (NAC)
X	S	GENESIS	2(1PR)	RED/BLACK	#16	VOICE NOTIFICATION
X	F	GENESIS	2(1PR)	RED/BLACK	#12	24 VDC POWER
N/A	C	AQUA SEAL	**2(1PR)**	**RED/BLACK**	#18	UG BUILDING INITIATION (SLC)
N/A	D	AQUA SEAL	2(1PR)	RED/BLACK	#12	UG NOTIFICATION (NAC)
N/A	E	AQUA SEAL	2(1PR)	RED/BLACK	#16	UG VOICE NOTIFICATION
N/A	G	AQUA SEAL	2(1PR)	RED/BLACK	#12	UG 24 VDC POWER

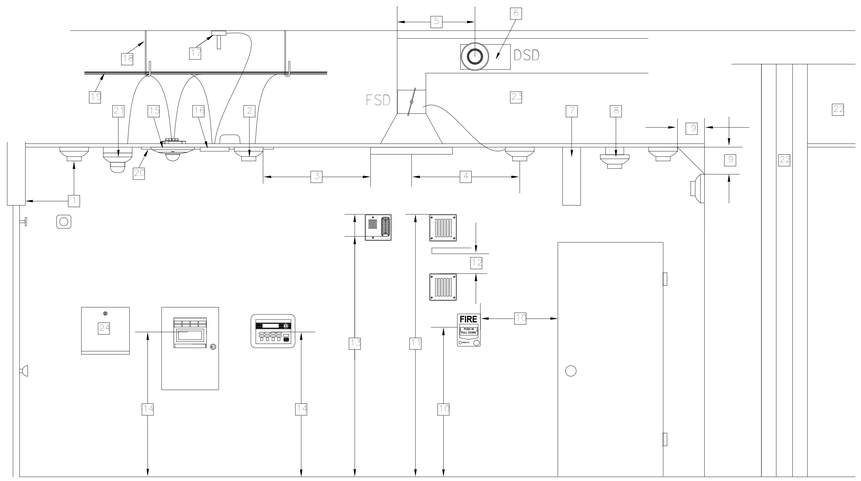
NUMBERED SHEET NOTES

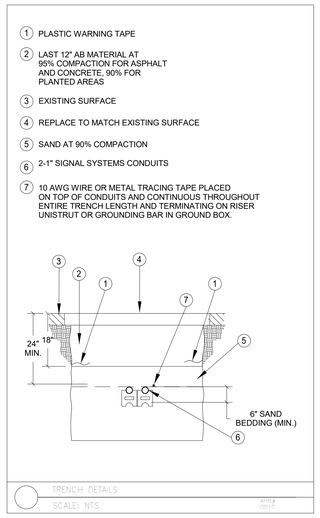
1. MOUNT DOOR HOLDER SMOKE DETECTOR MAXIMUM 3' FROM DOOR AND A MINIMUM OF 1'.
2. MAXIMUM DISTANCE BETWEEN SMOKE DETECTORS IS 30' AND 15' FROM WALLS, MAXIMUM DISTANCE FROM A CORNER IS 21" WITH CEILING LESS 10' OR LESS.
3. MOUNT SMOKE DETECTOR MINIMUM OF 3' AWAY FROM DIFFUSER VENT.
4. MOUNT SMOKE DETECTOR FOR FIRE SMOKE DAMPER (FSD) WITHIN 3' OF SUPPLY VENT.
5. DUCT SMOKE DETECTOR SHALL BE MOUNTED 6 TO 10 TIMES THE DIAMETER OF DUCT FROM BEND OR OBSTRUCTION.
6. WHERE DUCT SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS OR GREATER THAN 10' AFF, DETECTORS SHALL BE PROVIDED WITH A REMOTE INDICATOR OR SUPERVISORY INDICATION ACCEPTABLE WITH AUTHORITY HAVING JURISDICTION (AHJ). ALL HVAC GREATER THAN 2000cfm SHALL HAVE A DUCT DETECTOR IN THE SUPPLY AIR DUCT. GREATER THAN 15,000cfm SHALL HAVE ONE IN BOTH SUPPLY AND RETURN AIR DUCTS. HOWEVER SHALL NOT BE REQUIRED WHERE THE ENTIRE SPACE SERVED BY THE AIR DISTRIBUTION SYSTEM IS PROTECTED BY SMOKE DETECTORS THAT TRIGGER HVAC SHUT-DOWN
7. BEAM POCKET SPOT DETECTOR ARE REQUIRED FOR BEAMS GREATER THAN 18" BELOW CEILING AND SPACED MORE THAN 8' ON CENTER. EACH BAY FORMED BY BEAM SHALL BE TREATED AS A SEPARATE AREA. BEAMS LESS THAN 12" IN DEPTH AND SPACED LESS THAN 8' ON CENTER SHALL HAVE DETECTORS INSTALLED ON THE BOTTOM OF THE BEAM.
   - 7.1. OR, CEILINGS WITH BEAM DEPTHS LESS THAN 10 PERCENT OF THE CEILING HEIGHT, SMOOTH CEILING SPACING IS PERMITTED AND DETECTORS PLACED ON THE BOTTOM OF THE BEAM.
   - 7.2. BEAMS EQUAL TO OR GREATER THAN 10 PERCENT OF CEILING HEIGHT WITH BEAM SPACING GREATER THAN 40 PERCENT OF CEILING HEIGHT, SPOT DETECTORS SHALL BE LOCATED IN EACH CELL. NFPA 72 17.7.3.2.4.2
8. BEAMS PROJECTING LESS THAN 4" SHALL BE TREATED AS A SMOOTH CEILING.
9. SMOKE DETECTORS SHALL BE MOUNTED ON THE CEILING MINIMUM 4" FROM WALL, AND 4" MINIMUM TO 12" MAXIMUM FROM CEILING MOUNTED ON WALL.
10. MOUNT MANUAL PULL STATIONS AT 48" TO TOP OF BOX AFF, AND NO GREATER THAN 5' FROM DOOR.
11. MOUNT EXTERNAL HORN AT 90° MINIMUM AND 100° MAXIMUM TO THE TOP OF THE DEVICE.
12. FOR APPLICATIONS WHERE THE STRUCTURE IS BELOW 90°, MOUNT HORN AS HIGH AS WITH A MINIMUM OF 6" CLEARANCE TO THE TOP OF THE DEVICE.
13. MOUNT HORN / SPEAKER STROBE AND STROBE ONLY THE THE ENTIRE LENS IS WITHIN 80° AND 96° AFF.
14. MOUNT FIRE ALARM CONTROL PANELS AND ANNUNCIATORS AT A MAXIMUM OF 60" TO THE TOP OF THE CONTROL PANEL OR KEY BOARDS. CBC 11B-308
15. CEILING MOUNTED HORN / SPEAKER STROBE
16. MONITOR MODULE
17. RATE ANTICIPATOR HEAT DETECTOR, MOUNTED IN ABOVE CEILING / ATTIC SPACE.
18. APPROVED WIRE MANAGEMENT, ie J-HOOK OR D-RING.
19. ABOVE CEILING CIRCUITS ROUTING IN AN ACCESSIBLE ATTIC SPACE.
20. NON-ACCESSIBLE CEILINGS MUST USE EITHER EMT OR APPROVED WIREMOLD RACEWAY, AS SHOWN ON PLANS.
21. MULTI-CRITERIA PHOTOELECTRIC SMOKE / CO DETECTOR WITH SOUNDER BASE. MOUNT IN AREAS WHERE FOSSIL FUEL IS USED.
22. SMOKE / HEAT DETECTION COVERAGE IS REQUIRED IN ALL COMBUSTIBLE AREAS, UNLESS:
   - 22.1. CEILING IS ATTACHED DIRECTLY TO T HE UNDERSIDE OF THE SUPPORTING BEAM OR ROOF DECK.
   - 22.2. CONCEALED SPACE IS ENTIRELY FILLED WITH NON-COMBUSTIBLE INSULATION.
   - 22.3. THE SMALL CONCEALED SPACE OVER ROOMS THAT DO NOT EXCEED 50 SQ. FT. IN AREA.
   - 22.4. SPACES FORMED BY FACING STUDS OR SOLID JOISTS IN WALLS, FLOORS, OR CEILINGS WHERE THE FACING STUD OR SOLID JOIST IS LESS THAN 6".

   INACCESSIBLE SPACES THAT DO NOT MEET THIS CRITERIA MUST BE MADE ACCESSIBLE AND DETECTION MUST BE INSTALLED. NFPA72 17.5.3.1.1
23. DETECTION FOR CONCEALED ACCESSIBLE SPACES ABOVE SUSPENDED CEILING USED AS A RETURN PLENUM SHALL BE PROVIDED AT EACH CONNECTION FROM RETURN AIR PLENUM AT CENTRAL AIR HANDLING UNIT. NFPA 72 17.5.3.1.4
24. WITH EVERY NEW FIRE ALARM SYSTEM A DOCUMENTATION CABINET SHALL BE INSTALLED AT THE FIRE ALARM CONTROL PANEL OR AT ANOTHER LOCATION APPROVED BY AHJ. THE CABINET SHALL BE PROMINENTLY LABELED "SYSTEM RECORD DOCUMENTS".

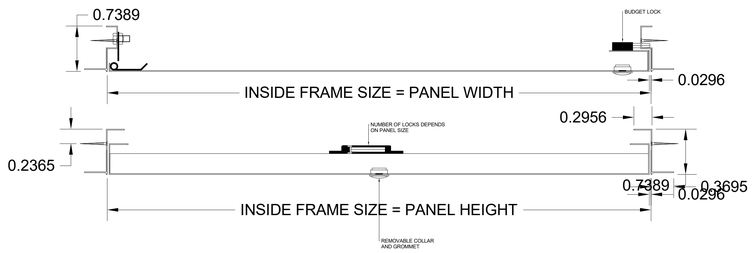
FIRE ALARM SYSTEM COMPONENT SCHEDULE

REQUIRED COMPONENTS	SYMBOL	EQUIPMENT/DEVICE	MANUFACTURER	MODEL / PART #	CSFM LISTING YEAR	CSFM LISTING NO.
X	FACP	FIRE ALARM CONTROL PANEL	GAMEWELL	E-3	6/30/2020	7165-1703:0125
X	AMP	AMPLIFIER	GAMEWELL	AM-50	6/30/2020	7165-1703:0125
X	BP-X	REMOTE POWER BOOSTER	GAMEWELL	HPF24-S8	6/30/2020	7315-1637:0102
X		INTELLIGENT DUCT DETECTOR	GAMEWELL	XP95	6/30/2020	7272-1703:0155
X		INTELLIGENT HEAT DETECTOR	GAMEWELL	ATD-L2F	6/30/2020	7270-1703:0115
N/A	AH	ATTIC HEAT DETECTOR	GAMEWELL	5622	6/30/2020	7270-1653:0167
X		PHOTO SMOKE DETECTOR	GAMEWELL	ASD-PL3	6/30/2020	7272-1703:0501
X	CO	FIRE/CO DETECTOR WITH SOUNDER BASE	GAMEWELL SYSTEM SENSOR	MCS-COF B200S	6/30/2020 6/30/2020	7275-1703:0175 7300-1653:0213
X	DM	DUAL MONITOR MODULE	GAMEWELL	AMM-2IF	6/30/2020	7300-1703:0107
X	SM	MONITOR MODULE	GAMEWELL	AMM-4F	6/30/2020	7300-1703:0102
X	IM	ISOLATION MODULE	GAMEWELL	M500X	6/30/2020	7300-1653:0103
X	CR	CONTROL RELAY	GAMEWELL	AOM-2RF	6/30/2020	7300-1703:0102
X	F	PULL STATION	GAMEWELL	MS-7	6/30/2020	7150-1703:0119
N/A		SPEAKER STROBE (CEILING)	SYSTEM SENSOR	SPSCWL	6/30/2020	7320-1653:0505
N/A		STROBE (CEILING)	SYSTEM SENSOR	SCWL	6/30/2020	7125-1653:0504
X		OUTDOOR SPEAKER	SYSTEM SENSOR	SPWK	6/30/2020	7320-1653:0201
X		SPEAKER STROBE (WALL)	SYSTEM SENSOR	SPSW	6/30/2020	7320-1653:0201
X		STROBE (WALL)	SYSTEM SENSOR	SW	6/30/2020	7125-1653:0156
X	EOLR	END-OF-LINE RELAY	SYSTEM SENSOR	EOLR-1	6/30/2020	7300-1653:0103
X	DOC	DOCUMENT BOX	SPACE AGE TECH	SRD-ACE-11	6/30/2020	7300-0553:0110





B E0.01 TYPICAL FIRE ALARM TRENCH DETAIL
DETAIL



A E0.01 TYPICAL FIRE ALARM ACCESS DOOR
DETAIL

FIRE ALARM NOTES

1. WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS,INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

STATE CALIFORNIA CODE OF REGULATIONS (CCR) 201 6 TITLE 24 CALIFORNIA BUILDING CODE
PART 2, 2016 CALIFORNIA BUILDING CODE (CBC), 201 5 IBC.
PART 3, 2016 CALIFORNIA ELECTRICAL CODE (CEC), 201 5 NEC.
PART 4, 2016 CALIFORNIA MECHANICAL CONDE (CMC), 201 5 UMC.
PART 5, 2016 CALIFORNIA PLUMBING CODE (CPC), 201 5 UPC.
PART 9, 2016 CALIFORNIA FIRE CODE (CFC) BASED ON 201 5 IFC.
2016 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 13, 72, 80, 90A, 99, AND 101.

2. INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTATION AND SPECIFICATIONS, INCLUDING STATE FIRE MARSHALL LISTING SHEETS FOR EACH COMPONENT OF THE SYSTEM HAS BEEN APPROVED BY DSA.
3. UPON COMPLETION OF INSTALLATION OF THE SYSTEMS, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF A DSA PROJECT INSPECTOR.
4. A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION.
5. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE ARCHITECT/ENGINEER OF RECORD.
6. DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND/ OR TESTING.
7. ALL PENETRATIONS THROUGH RATED ASSEMBLIES, REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITHIN THE SPECIFICATION WITHIN THE FIRE ALARM SECTION.
8. AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15DECIBLES (Dba) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 Dba ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIED SPACE WITHIN THE BUILDING.
9. AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.
10. THE CONTRACTOR SHALL ADJUST/INSTALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
11. VISUAL DEVICES SHOULD NOT EXCEED 2 FLASHES PER SECOND AND SHOULD NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELLA. VISUAL DEVICES WITHIN 55' FROM EACH OTHER SHALL BE SYNCHRONIZED
12. UNDERGROUND AND EXTERIOR CONDUIT TO HAVE WATERTIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
13. ALL FIRE ALARM WIRING SHALL BE FLP OR FPLP (FIRE POWER LIMITED OR FIRE POWER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE THHN OR THWN.
14. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
15. SMOKE DETECTORS SHALL BE NOT CLOSER THAN 1' FROM SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION OF NEWLY INSTALLED FIRE ALARM DEVICES SHALL BE COVERED UNTIL AREA IS READY TO BE TURNED OVER TO THE OWNER.
16. ALL FIRE ALARM CIRCUITS ARE TO BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE THE CEILINGS, UNDER FLOORS AND IN WALLS IN A NEAT AND PROTECTED MANNER AS INDICATED ON THE DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
17. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO DEVICE SHALL EXCEED THE WEIGHT OF 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
18. A DEDICATED BRANCH CIRCUIT SHALL BE PROVIDED FOR FIRE ALARM EQUIPMENT. THIS CIRCUIT SHALL BE ENERGIZED FROM A COMMON USE AREA PANEL AND SHALL HAVE OTHER OUTLETS. THE BREAKER SHALL HAVE A RED LOCKING DEVICE TO BLOCK THE HANDLE IN THE "ON" POSITION. THE CIRCUIT BREAKER SHALL BE LABELED "FIRE ALARM CIRCUIT CONTROL". CIRCUIT ID TO BE LABELED AT FIRE PANEL/EXPANDERS.
19. THE INSTALLER CONTRACTOR SHALL PROVIDE A RECORD OF COMPLETION PER NFPA 72, FIGURE 10.18.2.1.1.
20. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
21. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
22. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS. AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AND CBC 907.6.5.2. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX OR UUIS BY UL OR SHALL MEET THE REQUIREMENTS OF FM STANDARD 3011.
23. BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION THE INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE DSA PROJECT INSPECTOR TO THE EFFECT THAT THE SYSTEM HAS BEEN INSTALLED AND TESTED IN ACCORDANCE WITH THE NFPA 72 SECTION 14.4.1.
24. TEST, INSPECTION AND MAINTENANCE SHALL COMPLY WITH NFPA 72 CHAPTER 14 REQUIREMENTS.

FIRE ALARM SYSTEM DESCRIPTION

SCOPE OF THIS PROJECT IS TO PROVIDE A NEW FIRE ALARM PANEL WITH NEW VOICE EVACUATION PANEL, INCLUDING FACP, VOICE AMPLIFIERS, POWER SUPPLIES, MICROPHONE, INITIATION, NOTIFICATION AND CONTROL DEVICES AS SHOWN ON PLANS AND SPECIFICATIONS. PROVIDE ALL NEW CABLING, CABLING SHALL BE INSTALLED IN CONDUIT OR SURFACE RACEWAY, OR EXPOSED IN ACCESSIBLE CEILING SPACE.

FIRE ALARM SYSTEM: CLASS B
IDC: CLASS B
SLC CIRCUIT: CLASS B
NOTIFICATION CIRCUIT: CLASS B

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP. 02-118025 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 02/27/2020

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APPL. # 02-1
REVIEWED FOR
SS_____ FLS_____ ACS_____
DATE:_____

The Engineering Enterprise
CONSULTING ENGINEERS
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(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: NTS
DATE: 2019.12.20
TITLE: FIRE ALARM MATRIX, SCHEDULES & NOTES
DRAWING NO. E0.01

FIRE ALARM

	SMOKE DETECTOR INITIATING DEVICE, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
	SMOKE DETECTOR INITIATING DEVICE, WALL MOUNTED IN FLUSH JUNCTION BOX, MAXIMUM 6" BELOW CEILING.
	SMOKE DETECTOR INITIATING DEVICE, MOUNTED TO STRUCTURE ABOVE SUSPENDED CEILING IN SURFACE JUNCTION BOX OR SUSPENDED IN JUNCTION BOX IN FRONT OF RETURN AIR FIRE/SMOKE DAMPERS.
	SMOKE DETECTOR INITIATING DEVICE, DUCT-MOUNTED TYPE WITH SAMPLING TUBE, LOCATED AT SUPPLY AIR FANS 2000cfm AND LARGER.
	SMOKE DETECTOR INITIATING DEVICE, IN-DUCT MOUNTED TYPE AT DUCTED SUPPLY AIR FIRE/SMOKE DAMPERS.
	PROJECTED BEAM SMOKE DETECTOR INITIATING DEVICES TO INCLUDE TRANSMITTER, RECEIVER AND REMOTE INDICATOR STATION, WALL MOUNTED IN FLUSH JUNCTION BOX BELOW BEAM DETECTOR AT +42" AFF. BEAM DETECTORS ARE EITHER CEILING OR WALL MOUNTED 6" BELOW CEILING.
	HEAT DETECTOR INITIATING DEVICE, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
	HEAT DETECTOR INITIATING DEVICE, WALL MOUNTED IN FLUSH JUNCTION BOX, MAXIMUM 6" BELOW CEILING.
	HEAT DETECTOR INITIATING DEVICE, MOUNTED TO STRUCTURE ABOVE SUSPENDED CEILING IN SURFACE JUNCTION BOX.
	MANUAL PULL STATION INITIATING DEVICE, WALL MOUNTED AT +48" UON.
	SPRINKLER SYSTEM WATER FLOW SWITCH, NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM.
	SPRINKLER SYSTEM TAMPER SWITCH, NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM.
	SPRINKLER SYSTEM POST INDICATING VALVE 'PIV', NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM. INCLUDE A REMOTE MOUNTED ADDRESSABLE MONITORING MODULE AT PIV.
SM	REMOTE MOUNTED SINGLE INPUT, ADDRESSABLE, MONITORING MODULE FOR INITIATING CIRCUIT CONNECTION.
DM	REMOTE MOUNTED DUAL INPUT, ADDRESSABLE, MONITORING MODULE FOR INITIATING CIRCUIT CONNECTION.
CR	REMOTE MOUNTED PROGRAMMABLE CONTROL RELAY MODULE FOR ADDRESSABLE CONTROL.
DPS	DIFFERENTIAL PRESSURE SWITCH, NIEC. SYMBOLS DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM TO ANNUNCIATE FAN OPERATION. INCLUDE A REMOTE MOUNTED ADDRESSABLE MONITORING MODULE AT EACH LOCATION.
EOL	END-OF-LINE RESISTOR.
CT	CURRENT TRANSFORMER FOR MONITORING AVAILABLE POWER.
FRAP	FIREMANS REMOTE ANNUNCIATOR PANEL FRAP, FLUSH WALL MOUNTED, +42" UON.
	MAGNETIC TYPE DOOR HOLD OPEN/RELEASE DEVICE, WALL MOUNTED, NIEC. SYMBOL DENOTES INTERFACE FOR POWER AND CONTROL CONNECTIONS FROM FIRE ALARM SYSTEM.
	DOOR HOLD OPEN/RELEASE DEVICE INTEGRATED IN DOOR HARDWARE CLOSURE EQUIPMENT, NIEC. SYMBOL DENOTES INTERFACE FOR POWER AND CONTROL CONNECTIONS FROM FIRE ALARM SYSTEM.
	AUDIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER.
	VISIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	AUDIBLE/VISIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	AUDIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX.
	VISIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	AUDIBLE/VISIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	FIRE ALARM BELL FOR SPRINKLER FLOW ANNUNCIATOR, NIEC, POWERED AND INSTALLED BY ELECTRICAL, WALL MOUNTED ON EXTERIOR OF BUILDING.
	THERMISTOR SENSOR DEVICE IN FSAE LOBBIES FOR TEMPERATURE MONITORING, WALL MOUNTED 6" BELOW CEILING.
	SMOKE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
	SMOKE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, WALL MOUNTED MAXIMUM 6" BELOW CEILING IN FLUSH JUNCTION BOX.
C	COMBINATION SMOKE AND CARBON MONOXIDE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
C	COMBINATION SMOKE AND CARBON MONOXIDE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, WALL MOUNTED MAXIMUM 6" BELOW CEILING IN FLUSH JUNCTION BOX.
	REMOTE 2-WAY COMMUNICATION STATION, WALL MOUNTED, +42" AFF.

RACEWAYS

	CONDUIT RUN EXPOSED ON WALL OR CEILING.
	CONDUIT RUN CONCEALED IN SLAB, UNDER SLAB OR UNDERGROUND.
	CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING.
	CONDUIT HOMERUN, CONTINUOUS RUN TO PANEL OR EQUIPMENT CABINET. HOMERUN CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT TURNED UP, CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT TURNED DOWN, CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT CAPPED OR STUBBED WITH INSULATED BUSHINGS, CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT SLEEVE, WITH INSULATING BUSHINGS.
	FLEXIBLE METALLIC CONDUIT, EQUIPMENT CONNECTION.
	CROSSMARKS ON BRANCH CIRCUIT CONDUIT RUNS INDICATE THE QUANTITY OF CONDUCTORS AS FOLLOWS (GROUND CONDUCTORS ARE NOT NOTED, BUT SHOULD BE INCLUDED IN EVERY CONDUIT WITH POWER CONDUCTORS): 1. NO CROSSMARKS INDICATES TWO #12 AWG CONDUCTORS, UON. 2. THREE TO SIX CROSSMARKS INDICATES THE QUANTITY OF #12 AWG CONDUCTORS, UON. 3. SEVEN OR MORE CROSSMARKS INDICATES THE QUANTITY OF #10 AWG CONDUCTORS, UON.
	TWO PIECE SURFACE RACEWAY; TYPE, DEVICE SPACING AND MOUNTING AS NOTED ON PLANS.
	CABLE TRAY, CABLE RUNWAY OR LADDER RACK SUSPENDED FROM STRUCTURE ABOVE. REFER TO PLANS FOR SIZE AND MOUNTING.

ABBREVIATIONS

A	AMPERES	LCP	LIGHTING CONTROL PANEL
AFI	ARC FAULT CIRCUIT INTERRUPTER	MBGB	MAIN BUILDING GROUND BUS
AF	AMPERE OVERCURRENT FRAME SIZE (WHEN APPLIED TO CIRCUIT BREAKERS) OR AMPERE FUSE SIZE (WHEN APPLIED TO FUSES)	MCB	MAIN CIRCUIT BREAKER
		MCC	MOTOR CONTROL CENTER
		MLO	MAIN LUGS ONLY
AFF	ABOVE FINISHED FLOOR	MT	EMPTY
AIC	ASYMMETRIC INTERRUPTING CURRENT	MTS	MANUAL TRANSFER SWITCH
AL	ALUMINUM	(N)	NEW
AT	AMPERE OVERCURRENT TRIP (WHEN APPLIED TO CIRCUIT BREAKERS)	NC	NORMALLY CLOSED
ATS	AUTOMATIC TRANSFER SWITCH	NF	NON-FUSED
BAS	BUILDING AUTOMATION SYSTEM	NIEC	NOT IN ELECTRICAL CONTRACT
BPS	BOLTED PRESSURE CONTACT SWITCH	NO	NORMALLY OPEN
C	CONDUIT	NTS	NOT TO SCALE
CCTV	CLOSED CIRCUIT TELEVISION	OC	ON CENTER
CEC	CALIFORNIA ELECTRICAL CODE	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CL	CURRENT LIMITING CIRCUIT BREAKER OR FUSE	PDZ	PRIMARY DAYLIGHT ZONE
CP	CIRCULATION PUMP	PNL	PANEL
CT	CURRENT TRANSFORMER	PQM	POWER QUALITY METER
CU	COPPER	PT	POTENTIAL TRANSFORMER
DF	DRINKING FOUNTAIN	PVC	POLYVINYL CHLORIDE
(E)	EXISTING TO REMAIN	(R)	EXISTING TO BE REMOVED
EC	ELECTRICAL CONTRACTOR	(RR)	REMOVE AND RELOCATE
EF	EXHAUST FAN	SAD	SEE ARCHITECTURAL DRAWINGS
EP	EXPLOSION PROOF	TC	TIME CLOCK
EPO	EMERGENCY POWER OFF	TP	TWISTED-PAIR
EMT	ELECTRICAL METALLIC TUBING	SDZ	SECONDARY DAYLIGHT ZONE
EWH	ELECTRIC WATER HEATER	SPD	SURGE PROTECTION DEVICE
F	FUSED	TX	TRANSFORMER
(F)	FUTURE	TYP	TYPICAL
FACP	FIRE ALARM CONTROL PANEL	UON	UNLESS OTHERWISE NOTED
FFCP	FIREMAN'S FAN CONTROL PANEL	UPS	UNINTERRUPTIBLE POWER SUPPLY
FLA	FULL LOAD AMPERES	V	VOLTS
FMC	FLEXIBLE METAL CONDUIT	VA	VOLTS-AMPS
FSD	FIRE/SMOKE DAMPER	VFD	VARIABLE FREQUENCY DRIVE
FRAP	FIREMAN'S REMOTE ANNUNCIATOR PANEL	VM	VENDING MACHINE
G	GROUND	WAP	WIRELESS ACCESS POINT
GB	GROUND BUS	WP	WEATHERPROOF
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	2SP	TWO SPEED
GND	GROUND	1Ø	1-PHASE
GRAP	GENERATOR REMOTE ANNUNCIATOR PANEL	3Ø	3-PHASE
		1P	1-POLE
GRC	GALVANIZED RIGID CONDUIT	2P	2-POLE
HNC	HOME NETWORK CABINET	3P	3-POLE
HPC	HIGH PRESSURE CONTACT SWITCH	3W	3-WIRE
IG	ISOLATED GROUND	4W	4-WIRE
IMC	INTERMEDIATE METAL CONDUIT		

APPLIANCES

DO	DOUBLE OVEN	MW	MICROWAVE
DW	DISHWASHER	RF	REFRIGERATOR
ED	ELECTRIC DRYER	RH	RANGE HOOD
EO	ELECTRIC OVEN/RANGE	UR	UNDERCOUNTER REFRIGERATOR
GD	GARBAGE DISPOSER	WC	WINE COOLER
GR	GAS RANGE	WM	WASHING MACHINE

CONVENTIONS

(1) NUMBERED NOTE, APPLIES TO ALL DRAWINGS.

1 NUMBERED SHEET NOTE, APPLIES TO DRAWING CONTAINING NOTES ONLY.

(1) OVERCURRENT PROTECTIVE DEVICE SPACE IDENTIFICATION TAG. REFERS TO LOCATION OF PROTECTIVE OR CONTROL DEVICE WITHIN SWITCHBOARDS, DISTRIBUTION BOARDS, MOTOR CONTROL CENTERS, ETC.

(NAME) EQUIPMENT IDENTIFICATION TAG: ITEM FURNISHED AND INSTALLED UNDER ANOTHER SECTION AND WIRED UNDER THIS SECTION.

2004 FEEDER SIZE. REFER TO FEEDER SCHEDULE.

1 / E-801 DETAIL REFERENCE:
- DETAIL DESIGNATION
- SHEET NUMBER

2 - F3 FIXTURE IDENTIFICATION TAG:
- FIXTURE TYPE
- QUANTITY

- 7S4 - UNDERGROUND CONDUIT DESIGNATION:
- CONDUIT SIZE IN INCHES
- CONDUIT SYSTEM DESIGNATION
  - P: PRIMARY POWER
  - S: SECONDARY POWER
  - T: TELECOMMUNCATIONS
- QUANTITY OF CONDUITS

2 E H 2 A SWITCHBOARDS, DISTRIBUTION BOARDS, AND PANELBOARDS:
- BOARD DESIGNATION
- FLOOR NUMBER
- VOLTAGE CLASSIFICATION
  - PS : PRIMARY SUBSTATION
  - MS : MAIN SWITCHBOARD
  - H : 277/480 PANELBOARD
  - L : 120/208 PANELBOARD
  - SS : SECONDARY SUBSTATION
  - HD : 277/480 DIST. BOARD
  - LD : 120/208 DIST. BOARD

2 E MCC / 1B MOTOR CONTROL CENTERS:
- MCC DESIGNATION
- FLOOR NUMBER
- MOTOR CONTROL CENTER

2 E TX / 2A TRANSFORMERS:
- TRANSFORMER DESIGNATION
- FLOOR NUMBER
- TRANSFORMER
- POWER SOURCE
  - : NORMAL
  - E : EMERGENCY or ESSENTIAL
  - U : UP
  - C : CRITICAL
  - S : LIFE SAFETY

2 T TB / 2A SIGNAL SYSTEM TERMINALS:
- TERMINAL DESIGNATION
- FLOOR NUMBER
- TERMINAL TYPE
  - TB : TERMINAL BOARD
  - TC : TERMINAL CABINET
- TERMINAL CLASSIFICATION
  - D : DATA
  - FA : FIRE ALARM
  - S : SECURITY
  - T : TELEPHONE
  - TV : TELEVISION
- BUILDING NUMBER (WHEN APPLICABLE)

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The Engineering Enterprise
CONSULTING ENGINEERS
1305 MARINA VILLAGE PARKWAY
ALAMEDA, CA 94501
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REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015497
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer

SCALE:

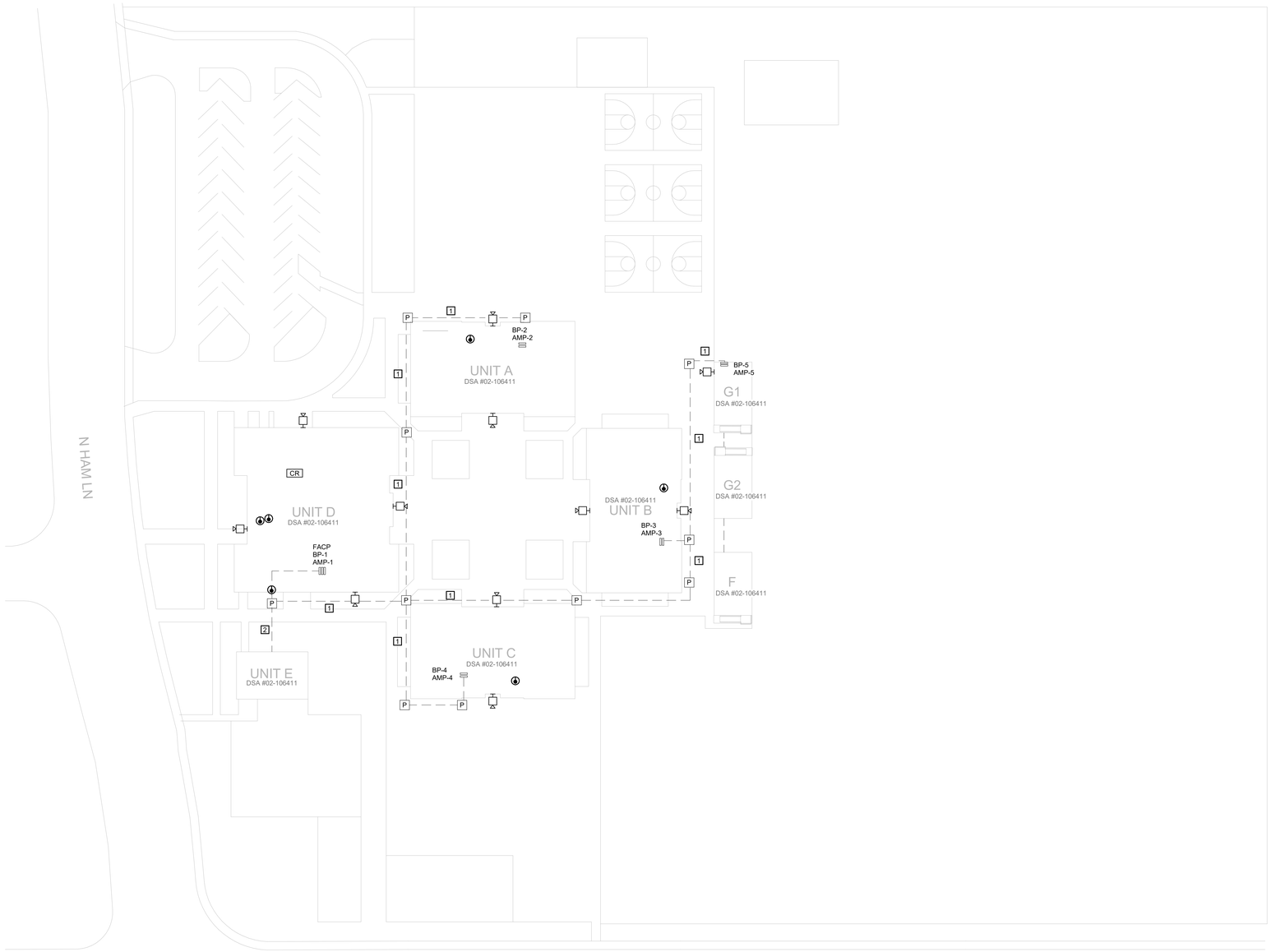
DATE: 2019.12.20

TITLE:
SYMBOLS, LEGENDS, NOTES, & LEGENDS

DRAWING NO.
E0.00

NUMBERED SHEET NOTES

1. EXISTING PATHWAYS.
2. TRENCHING REQUIRED- PROVIDE TWO 1" CONDUIT (UG) FROM BLDG. D TO BLDG E.



1 SITE PLAN

SCALE: 1/32" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
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No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

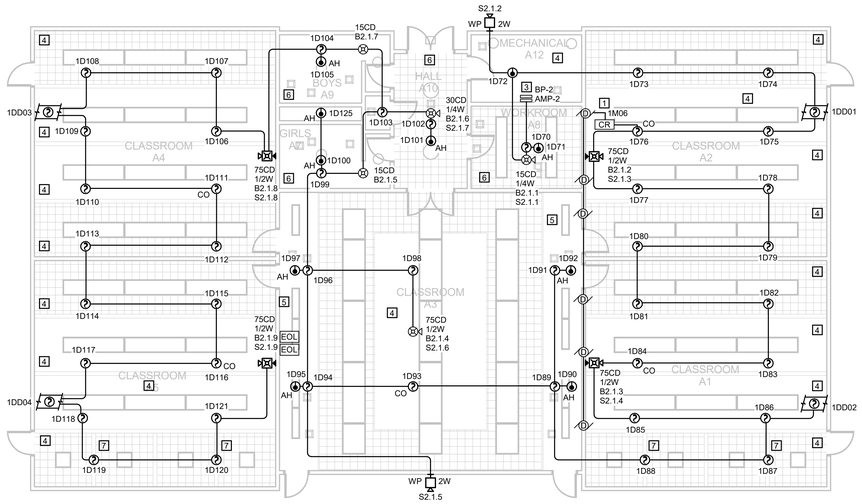
DESIGNER: Designer

SCALE: 1/32" = 1'-0"

DATE: 2019.12.20

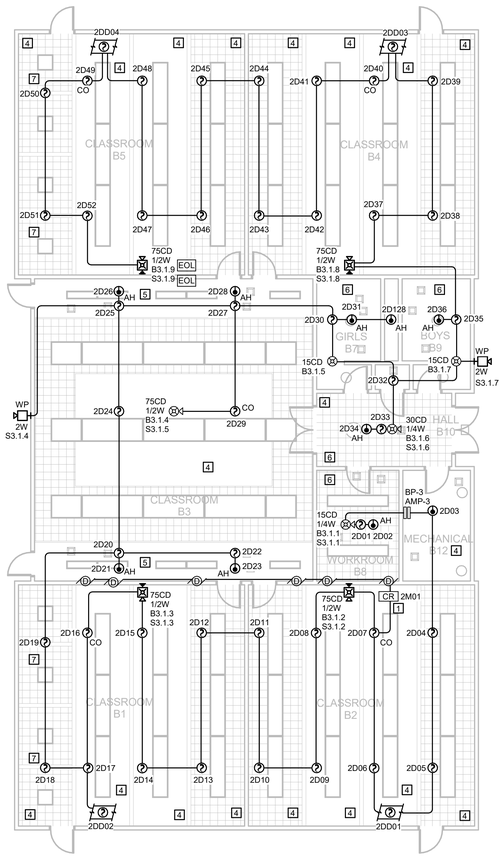
TITLE: SITE PLAN

DRAWING NO. E1.00



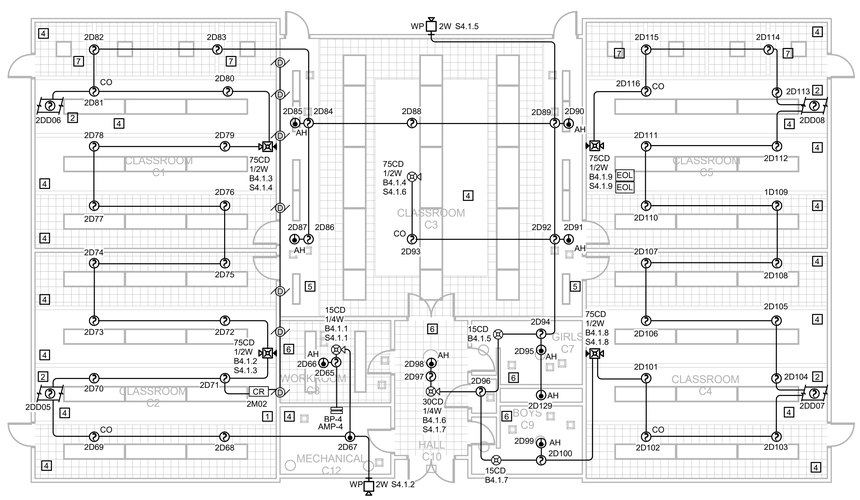
1 Building A Fire Alarm Plan

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



2 Building B Fire Alarm Plan

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



3 Building C Fire Alarm Plan

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

GENERAL SHEET NOTES

A. FIRE ALARM SYSTEM INSTALLATION SHALL COMPLY WITH ALL REQUIREMENTS OF APPLICABLE CODES, STANDARDS AND STATE REGULATIONS.

B. FIRE ALARM CIRCUITS AND CIRCUIT ROUTING ARE SHOWN SCHEMATICALLY FOR CLARITY ILLUSTRATING THE WIRING CONFIGURATION NECESSARY FOR PROPER CIRCUIT SUPERVISION.

C. COORDINATE CEILING MOUNTED FIRE ALARM DEVICE LOCATIONS WITH NEW LIGHT FIXTURES TO AVOID CONFLICTS.

D. DO NOT INSTALL FIRE ALARM DEVICES BACK TO BACK IN STUD WALLS.

E. INSTALL FIRE ALARM CONDUCTORS IN CONDUIT OR METAL SURFACE RACEWAY WHEN IN EXPOSED SPACES. MINIMUM SIZE OF CONDUIT SHALL BE 0.75". UTILIZE WIREMOLD 700 SERIES SURFACE RACEWAY (IN LIEU OF CONDUIT) FOR AREA WHERE CONDUIT CANNOT BE INSTALLED CONCEALED. CABLE ABOVE ACCESSIBLE CEILING CAN BE INSTALLED FREE AIR WHEN USING APPLICABLE CABLE. SUPPORT ALL FREE AIR CABLE EVERY 48" WITH J-HOOKS.

F. ALL SPEAKER, SPEAKER/STROBES SHALL HAVE MINIMUM 0.75" CONDUIT PATHWAYS. USE OF EXISTING 0.5" CONDUIT PATHWAY IS NOT ACCEPTABLE.

G. ENSURE THAT SPEAKER/STROBES ARE MOUNTED IN 5" SQ. X 2 7/8" DEEP BOX, FOR SURFACE MOUNTED DEVICES. FLUSH MOUNTED DEVICES SHALL BE MOUNTED IN THE MANUFACTURES DESIGNATED BACK BOXES, COLOR TO MATCH DEVICE.

H. REFER TO E3.00 FOR RISER DIAGRAMS.

I. CONTRACTOR SHALL PROVIDE 120V DEDICATED RED LOCKING CIRCUIT BREAKER PER FIRE ALARM SYSTEM PANELS PER LOCATION.

J. THE FIRE ALARM SYSTEM WILL BE DEMOLISHED AND REPLACED TO THE CURRENT 2016 CFC. THE SYSTEM WILL BE A FULLY AUTOMATIC SYSTEM WITH EMERGENCY VOICE ANNUNCIATION. FULL COVERAGE IN EACH BUILDING SHALL BE PROVIDED. COMMUNICATION WILL BE PROVIDED TO A CENTRAL MONITORING STATION.

K. EXPOSED CEILINGS. USE EXISITING WIRE MOLD WHEN POSSIBLE.

NUMBERED SHEET NOTES

1. AREA DETECTOR TO INITIATE (CR) CONTROL RELAY TO ACTIVATE (FSD) FIRE SMOKE DAMPER CLOSURE.
2. DUCT SMOKE DETECTOR TO ACTIVATE HVAC SHUT DOWN.
3. SEE SITE SHEET E1.0 AND RISER DIAGRAM E3.0 FOR CONDUIT PATHWAY.
4. RAISED CEILING DIRECTLY BELOW ROOF DECK WITH EXPOSED CEILINGS; NO AH HEATS REQUIRED.
5. SOFFIT SPACE REQUIRING AH HEAT COVERAGE.
6. LOWERED CEILING WITH ATTIC SPACE ABOVE. AH HEAT COVERAGE REQUIRED.
7. PLACE SMOKE DETECTOR ON BOTTOM OF BEAM.

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AUBURN, CA 95603
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REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

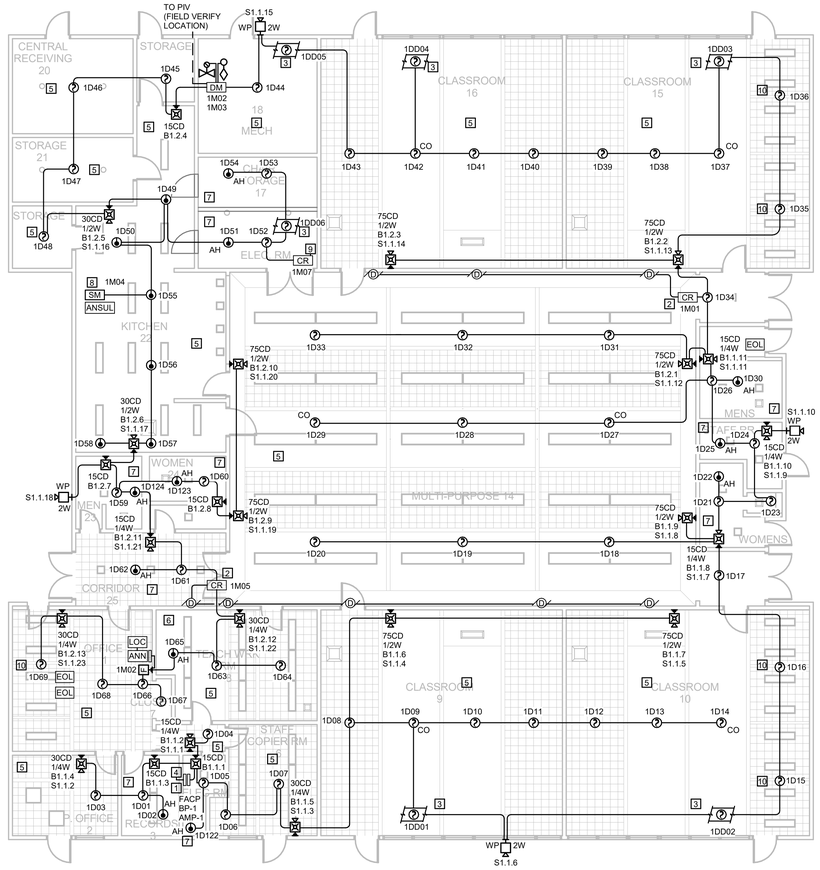
DESIGNER: Designer

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

DATE: 2019.12.20

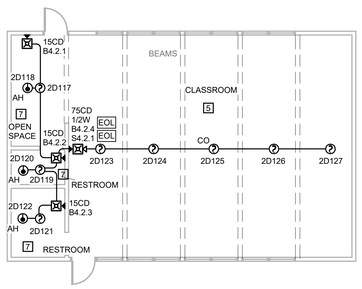
TITLE:
FIRE ALARM PLAN - A, B & C

DRAWING NO.
E2.00



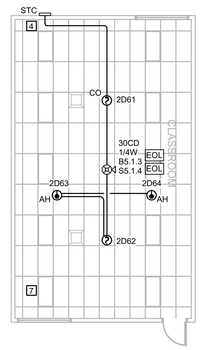
1 Building D Fire Alarm Plan

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



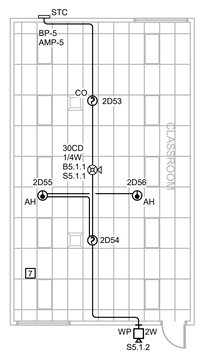
2 Building E Fire Alarm Plan

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



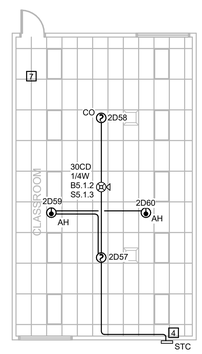
3 Portable F Fire Alarm Plan

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



4 Portable G1 Fire Alarm Plan

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



5 Portable G2 Fire Alarm Plan

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

GENERAL SHEET NOTES

A. FIRE ALARM SYSTEM INSTALLATION SHALL COMPLY WITH ALL REQUIREMENTS OF APPLICABLE CODES, STANDARDS AND STATE REGULATIONS.

B. FIRE ALARM CIRCUITS AND CIRCUIT ROUTING ARE SHOWN SCHEMATICALLY FOR CLARITY ILLUSTRATING THE WIRING CONFIGURATION NECESSARY FOR PROPER CIRCUIT SUPERVISION.

C. COORDINATE CEILING MOUNTED FIRE ALARM DEVICE LOCATIONS WITH NEW LIGHT FIXTURES TO AVOID CONFLICTS.

D. DO NOT INSTALL FIRE ALARM DEVICES BACK TO BACK IN STUD WALLS.

E. INSTALL FIRE ALARM CONDUCTORS IN CONDUIT OR METAL SURFACE RACEWAY WHEN IN EXPOSED SPACES. MINIMUM SIZE OF CONDUIT SHALL BE 0.75". UTILIZE WIREMOLD 700 SERIES SURFACE RACEWAY (IN LIEU OF CONDUIT) FOR AREA WHERE CONDUIT CANNOT BE INSTALLED CONCEALED. CABLE ABOVE ACCESSIBLE CEILING CAN BE INSTALLED FREE AIR WHEN USING APPLICABLE CABLE. SUPPORT ALL FREE AIR CABLE EVERY 48" WITH J-HOOKS.

F. ALL SPEAKER, SPEAKER/STROBES SHALL HAVE MINIMUM 0.75" CONDUIT PATHWAYS. USE OF EXISTING 0.5" CONDUIT PATHWAY IS NOT ACCEPTABLE.

G. ENSURE THAT SPEAKER/STROBES ARE MOUNTED IN 5" SQ. X 2 7/8" DEEP BOX, FOR SURFACE MOUNTED DEVICES. FLUSH MOUNTED DEVICES SHALL BE MOUNTED IN THE MANUFACTURES DESIGNATED BACK BOXES, COLOR TO MATCH DEVICE.

H. REFER TO E3.00 FOR RISER DIAGRAMS.

I. CONTRACTOR SHALL PROVIDE 120V DEDICATED RED LOCKING CIRCUIT BREAKER PER FIRE ALARM SYSTEM PANELS PER LOCATION.

J. THE FIRE ALARM SYSTEM WILL BE DEMOLISHED AND REPLACED TO THE CURRENT 2016 CFC. THE SYSTEM WILL BE A FULLY AUTOMATIC SYSTEM WITH EMERGENCY VOICE ANNUNCIATION. FULL COVERAGE IN EACH BUILDING SHALL BE PROVIDED. COMMUNICATION WILL BE PROVIDED TO A CENTRAL MONITORING STATION.

K. EXPOSED CEILINGS. USE EXISITING WIRE MOLD WHEN POSSIBLE.

NUMBERED SHEET NOTES

1. DACT WILL TRASMIT SIGNALS TO OFF SITE MONITORING VIA PHONE LAND LINE WITH A CELLULAR BACK UP.
2. AREA DETECTOR TO INITIATE (CR) CONTROL RELAY TO ACTIVATE (FSD) FIRE SMOKE DAMPER CLOSURE.
3. DUCT DETECTOR TO ACTIVATE HVAC SHUT DOWN.
4. SEE SITE SHEET E1.0 AND RISER DIAGRAM E3.0 FOR CONDUIT PATHWAYS.
5. RAISED CEILING DIRECTLY BELOW ROOF DECK WITH EXPOSED CEILINGS; NO AH HEATS REQUIRED.
6. SOFFIT SPACE REQUIRING AH HEAT COVERAGE.
7. LOWERED CEILING WITH ATTIC SPACE ABOVE. AH HEAT COVERAGE REQUIRED.
8. MONITOR MODULE TO MONITOR KITCHEN ANSUL SYSTEM.
9. AREA SMOKE DETECTOR TO INITIATE (CR) CONTROL RELAY TO ACTIVATE A/V RACK SHUT OFF.
10. PLACE SMOKE DETECTOR ON BOTTOM OF BEAM.

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REVISIONS

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DESIGNER: Designer

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

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TITLE:
FIRE ALARM PLAN - D, E & PORTABLES F, G1 & G2

DRAWING NO.
E2.01

1 FIRE ALARM RISER

SCALE:NTS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP. 02-118025 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 02/27/2020

IDENTIFICATION STAMP
DIV. OF THE S
APPL. # 02-1
REVIVEWED FOR
SS_____ FLS_____ ACS_____
DATE:_____

The Engineering Enterprise
CONSULTING ENGINEERS
1125 HIGH STREET
AUBURN, CA 95603
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer

SCALE: NTS

DATE: 2019.12.20

TITLE:
FIRE ALARM RISER

DRAWING NO.
E3.00

System Current Draw

E3 Series Control Panel with Broadband

	Total Standby	0.780 A	Total Alarm	8.253 A

Device	Standby Current Qty	Draw	Standby	Alarm Current Qty	Draw	Alarm
1. System Device						
Intel. Loop Interface. Main Board (IL1MB-E3)	1 x	0.08100	0.08100	1 x	0.15000	0.15000
Intel. Loop Interface Supplement Board (ILS-E3)	0 x	0.08100		0 x	0.15000	
Intel. Loop Interface Main Board - Apollo (IL95-MB-E3)	0 x	0.09000		0 x	0.09100	
Intel. Loop Interface Supplement Board - Apollo (IL95-S-E3)	0 x	0.09000		0 x	0.09100	
7100 Panel, 1 SLC	1 x	0.05600	0.05600	1 x	0.07600	0.07600
7100 Panel, 1 SLC with DACT	0 x	0.07500		0 x	0.09500	
7100 Panel, 2 SLC	0 x	0.06000		0 x	0.08000	
7100 Panel, 2 SLC with DACT	0 x	0.08500		0 x	0.10500	
2. E3 Optional Modules						
120V Power Supply Sub-Assembly (PM-9)	0 x	0.05000		0 x	0.05000	
240V Power Supply Sub-Assembly (PM-9G)	0 x	0.02700		0 x	0.05000	
LCD Display & Switch Control (LCD-E3)	0 x	0.02400		0 x	0.02800	
ARCNET Repeater (RPT-E3)	0 x	0.01300		0 x	0.01300	
Digital Communicator (DACT-E3)	1 x	0.01800	0.01800	1 x	0.01800	0.01800
Optional Remote Serial Annunciator (LCD-7100)	0 x	0.05000		0 x	0.07500	
Network LCD Annunciator (NCA)	0 x	0.20000		0 x	0.20000	
Auxiliary Switch Sub-Assembly (ASM-16)	0 x	0.01100		0 x	0.01100	
Remote LED Driver Module (ANU-48)	0 x	0.01100		0 x	0.01100	
Addressable Node Expander (ANX)	0 x	0.06500		0 x	0.06500	
3. 7100 Optional Modules						
Intelligent Network Interface Module (INI-7100)	0 x	0.04000		0 x	0.04000	
Printer Transient Module (PTRM)	0 x	0.02000		0 x	0.02000	
Remote LED Driver Module (ILDM-7100)	0 x	0.03500		0 x	0.20000	
Class A Option Module (CAOM)	0 x	0.00100		0 x	0.00100	
Municipal Circuit Option Module (MCOM)	0 x	0.00100		0 x	0.00100	
4. INI-VGC Command Center						
Intel. Network Command Center (INI-VGC)	0 x	0.15000		0 x	0.15000	
Addressable Switch Sub-assembly (ASM-16)	0 x	0.01100		0 x	0.01100	
Voice Paging Microphone (Microphone)	0 x	0.00100		0 x	0.00100	
Firefighter's Telephone (Handset)	0 x	0.02000		0 x	0.02000	
Addressable Output Module-Telephone (AOM-TEL)	0 x	0.00200		0 x	0.00650	
5. INI-VGX Voice Gateway						
Intel. Network Voice Gateway (INI-VGX)	0 x	0.15000		0 x	0.15000	
120V Power Supply Sub-Assembly (PM-9)	0 x	0.05000		0 x	0.05000	
240V Power Supply Sub-Assembly (PM-9G)	0 x	0.02700		0 x	0.05000	
Amplifier Sub-assembly, 50 watt 25V (AM-50)	3 x	0.08600	0.25800	3 x	2.20600	6.61800
Amplifier Sub-assembly, 50 watt 70V (AM-50-70)	0 x	0.04900		0 x	2.20600	
Addressable Output Module-Signal (AOM-2SF)	0 x	0.00200		0 x	0.00650	
Addressable Output Module-Telephone (AOM-TEL)	0 x	0.00200		0 x	0.00650	
Addressable Output Module-Audio (AOM-MUX)	0 x	0.00200		0 x	0.00650	
6. INI-VGE Command Center Voice Gateway						
Intel. Network Command Voice Gateway (INI-VGE)	0 x	0.15000		0 x	0.15000	
Addressable Switch Sub-assembly (ASM-16)	0 x	0.01100		0 x	0.01100	
Voice Paging Microphone (Microphone)	1 x	0.00100	0.00100	1 x	0.00100	0.00100
Firefighter's Telephone (Handset)	0 x	0.02000		0 x	0.02000	
Addressable Output Module-Signal (AOM-2SF)	0 x	0.00200		0 x	0.00650	
Addressable Output Module-Telephone (AOM-TEL)	0 x	0.00200		0 x	0.00650	
Addressable Output Module-Audio (AOM-MUX)	0 x	0.00200		0 x	0.00650	
7. Smoke Detectors/Modules						
ATD-L2F HEAT DETECTOR	0 x	0.00030		0 x	0.00650	
PHOTO SMOKE DETECTOR	138 x	0.00200	0.27600	138 x	0.00850	1.17300
D965 DUCT DETECTOR	19 x	0.00400	0.07200	0 x	0.20000	
MCS-COF COSMOS DETECTOR	5 x	0.00030	0.00150	5 x	0.00650	0.03250
AMV2F DUAL MONITOR MODULE	1 x	0.00150	0.00150	1 x	0.00570	0.00570
AMM-4F MONITOR MODULE	x	0.00038		0 x	0.00500	
MX2IX ISOLATION MODULE	0 x	0.00000		0 x	0.00500	
ADM-2RF RELAY MODULE	5 x	0.00038	0.00188	5 x	0.00650	0.03250
MS7 PULL STATION	1 x	0.00030	0.00030	1 x	0.00300	0.00300
ADDRESSABLE HEAT DETECTOR	22 x	0.00030	0.00660	22 x	0.00650	0.14300
8. Notification Appliances						
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
	0 x	0.00000		0 x	0.00000	
		Total Standby Load: 0.780 A			Total Alarm Load: 8.253 A	

LAKEWOOD AMPLIFIER 1

Device Type	QTY	Standby Current (amps) Watts	Current Draw	Total	Alarm Current (amps) Qty	Current Draw	Total
1. System							
AM-50	1	50 X	0.0860 =	0.0860	0 X	2.2060 =	2.2060
		X	=		0 X	=	0.0000
		X	=		0 X	=	0.0000
2. Speakers							
Total Speaker Watts @ 25Vrms		15.5		0.6200		=	0.6200
Total Speaker Watts @ 70.7Vrms				0.0000		=	0.0000
			Total Standby Load	0.0860		Total Alarm Load	2.8260
			0				

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.8260 Amps	X	15	= 0.707 AH
			Total Current Load	2.77 AH
			*Multiply by the Derating Factor	= x 1.20
			Total Ampere Hours Required	3.32 AH
			Recommended Batteries:	7AH

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

LAKEWOOD AMPLIFIER 2

Device Type	QTY	Standby Current (amps) Watts	Current Draw	Total	Alarm Current (amps) Qty	Current Draw	Total
1. System							
AM-50	1	50 X	0.0860 =	0.0860	0 X	2.2060 =	2.2060
		X	=		0 X	=	0.0000
		X	=		0 X	=	0.0000
2. Speakers							
Total Speaker Watts @ 25Vrms		7		0.2800		=	0.2800
Total Speaker Watts @ 70.7Vrms				0.0000		=	0.0000
			Total Standby Load	0.0860		Total Alarm Load	2.4860
			0				

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.4860 Amps	X	15	= 0.622 AH
			Total Current Load	2.69 AH
			*Multiply by the Derating Factor	= x 1.20
			Total Ampere Hours Required	3.22 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

LAKEWOOD AMPLIFIER 3

Device Type	QTY	Standby Current (amps) Watts	Current Draw	Total	Alarm Current (amps) Qty	Current Draw	Total
1. System							
AM-50	1	50 X	0.0860 =	0.0860	0 X	2.2060 =	2.2060
		X	=		0 X	=	0.0000
		X	=		0 X	=	0.0000
2. Speakers							
Total Speaker Watts @ 25Vrms		7		0.2800		=	0.2800
Total Speaker Watts @ 70.7Vrms				0.0000		=	0.0000
			Total Standby Load	0.0860		Total Alarm Load	2.4860
			0				

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.4860 Amps	X	15	= 0.622 AH
			Total Current Load	2.69 AH
			*Multiply by the Derating Factor	= x 1.20
			Total Ampere Hours Required	3.22 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

LAKEWOOD AMPLIFIER 4

Device Type	QTY	Standby Current (amps) Watts	Current Draw	Total	Alarm Current (amps) Qty	Current Draw	Total
1. System							
AM-50	1	50 X	0.0860 =	0.0860	0 X	2.2060 =	2.2060
		X	=		0 X	=	0.0000
		X	=		0 X	=	0.0000
2. Speakers							
Total Speaker Watts @ 25Vrms		7.25		0.2900		=	0.2900
Total Speaker Watts @ 70.7Vrms				0.0000		=	0.0000
			Total Standby Load	0.0860		Total Alarm Load	2.4960
			0				

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.4960 Amps	X	15	= 0.624 AH
			Total Current Load	2.69 AH
			*Multiply by the Derating Factor	= x 1.20
			Total Ampere Hours Required	3.23 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

LAKEWOOD AMPLIFIER 5

Device Type	QTY	Standby Current (amps) Watts	Current Draw	Total	Alarm Current (amps) Qty	Current Draw	Total
1. System							
AM-50	1	50 X	0.0860 =	0.0860	0 X	2.2060 =	2.2060
		X	=		0 X	=	0.0000
		X	=		0 X	=	0.0000
2. Speakers							
Total Speaker Watts @ 25Vrms		2.75		0.1100		=	0.1100
Total Speaker Watts @ 70.7Vrms				0.0000		=	0.0000
			Total Standby Load	0.0860		Total Alarm Load	2.3160
			0				

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.3160 Amps	X	15	= 0.579 AH
			Total Current Load	2.64 AH
			*Multiply by the Derating Factor	= x 1.20
			Total Ampere Hours Required	3.17 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-1
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4 CLASS: CLASS B
AWG: 12 TOTAL DEVICES: 10
POWER: DC 36.13 % (1.084) AMPS USED
AMPS: 3 3.27 % (0.668) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSW (Stro	15				0.066	25	20.291	20.227	20.125	19.962
2	SPSW (Stro	15				0.066	25	20.189	20.065	19.866	19.551
3	SPSW (Stro	15				0.066	25	20.093	19.913	19.624	19.166
4	SPSW (Stro	30				0.094	25	20.004	19.772	19.399	18.808
5	SPSW (Stro	30				0.094	25	19.924	19.646	19.198	18.488
6	SPSW (Stro	75				0.158	25	19.854	19.535	19.021	18.206
7	SPSW (Stro	75				0.158	25	19.800	19.449	18.884	17.988
8	SPSW (Stro	75				0.158	25	19.762	19.388	18.787	17.834
9	SPSW (Stro	75				0.158	25	19.739	19.352	18.730	17.744
10	SW	15				0.066	25	19.732	19.341	18.713	17.717
						VOLTAGE D		0.668	1.059	1.687	2.683

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 2
POWER SOURCE: BPS-1
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4 CLASS: CLASS B
AWG: 12 TOTAL DEVICES: 11
POWER: DC 43.27 % (1.298) AMPS USED
AMPS: 3 3.25 % (0.662) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSW (Stro	75				0.158	25	20.270	20.193	20.070	19.876
2	SPSW (Stro	75				0.158	25	20.155	20.011	19.780	19.415
3	SPSW (Stro	75				0.158	25	20.056	19.854	19.531	19.018
4	SPSW (Stro	75				0.158	25	19.973	19.723	19.322	18.685
5	SPSW (Stro	75				0.158	25	19.906	19.617	19.153	18.416
6	SPSW (Stro	30				0.094	25	19.855	19.536	19.024	18.211
7	SPSW (Stro	30				0.094	25	19.813	19.470	18.919	18.044
8	SPSW (Stro	30				0.094	25	19.781	19.419	18.838	17.915
9	SPSW (Stro	30				0.094	25	19.758	19.383	18.781	17.824
10	SPSW (Stro	15				0.066	25	19.745	19.362	18.747	17.771
11	SW	15				0.066	25	19.738	19.351	18.730	17.744
						VOLTAGE D		0.662	1.049	1.670	2.656

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-2
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4 CLASS: CLASS B
AWG: 12 TOTAL DEVICES: 9
POWER: DC 32.63 % (0.979) AMPS USED
AMPS: 3 2.51 % (0.512) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.302	20.244	20.151	20.004
2	SPSCWL	30				0.063	25	20.208	20.094	19.913	19.625
3	SPSCWL	75				0.111	25	20.120	19.954	19.691	19.271
4	SPSW (Stro	75				0.158	25	20.043	19.832	19.497	18.962
5	SPSW (Stro	75				0.158	25	19.982	19.735	19.343	18.717
6	SPSW (Stro	75				0.158	25	19.937	19.664	19.229	18.536
7	SPSW (Stro	75				0.158	25	19.908	19.618	19.155	18.419
8	SCW	15				0.066	25	19.895	19.597	19.121	18.366
9	SCW	15				0.066	25	19.888	19.586	19.104	18.339
						VOLTAGE D		0.512	0.814	1.296	2.061

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-3
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4 CLASS: CLASS B
AWG: 12 TOTAL DEVICES: 9
POWER: DC 32.63 % (0.979) AMPS USED
AMPS: 3 2.49 % (0.507) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.302	20.244	20.151	20.004
2	SPSCWL	75				0.111	25	20.208	20.094	19.913	19.625
3	SPSCWL	30				0.063	25	20.125	19.962	19.703	19.291
4	SPSW (Stro	75				0.158	25	20.048	19.840	19.509	18.982
5	SPSW (Stro	75				0.158	25	19.987	19.743	19.355	18.737
6	SPSW (Stro	75				0.158	25	19.942	19.672	19.241	18.556
7	SPSW (Stro	75				0.158	25	19.913	19.626	19.167	18.439
8	SCW	15				0.066	25	19.900	19.605	19.133	18.386
9	SCW	15				0.066	25	19.893	19.594	19.116	18.359
						VOLTAGE D		0.507	0.806	1.284	2.041

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-4
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4 CLASS: CLASS B
AWG: 12 TOTAL DEVICES: 4
POWER: DC 11.87 % (0.356) AMPS USED
AMPS: 3 .51 % (0.104) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SW	15				0.066	25	20.364	20.343	20.310	20.256
2	SW	15				0.066	25	20.335	20.297	20.236	20.139
3	SW	15				0.066	25	20.312	20.261	20.179	20.049
4	SPSW (Stro	75				0.158	25	20.296	20.236	20.139	19.985
						VOLTAGE D		0.104	0.164	0.261	0.415

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-5
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4 CLASS: CLASS B
AWG: 12 TOTAL DEVICES: 3
POWER: DC 6.3 % (0.189) AMPS USED
AMPS: 3 .19 % (0.038) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	30				0.063	25	20.381	20.370	20.352	20.324
2	SPSCWL	30				0.063	25	20.368	20.350	20.320	20.273
3	SPSCWL	30				0.063	25	20.362	20.340	20.304	20.248
						VOLTAGE D		0.038	0.060	0.096	0.152

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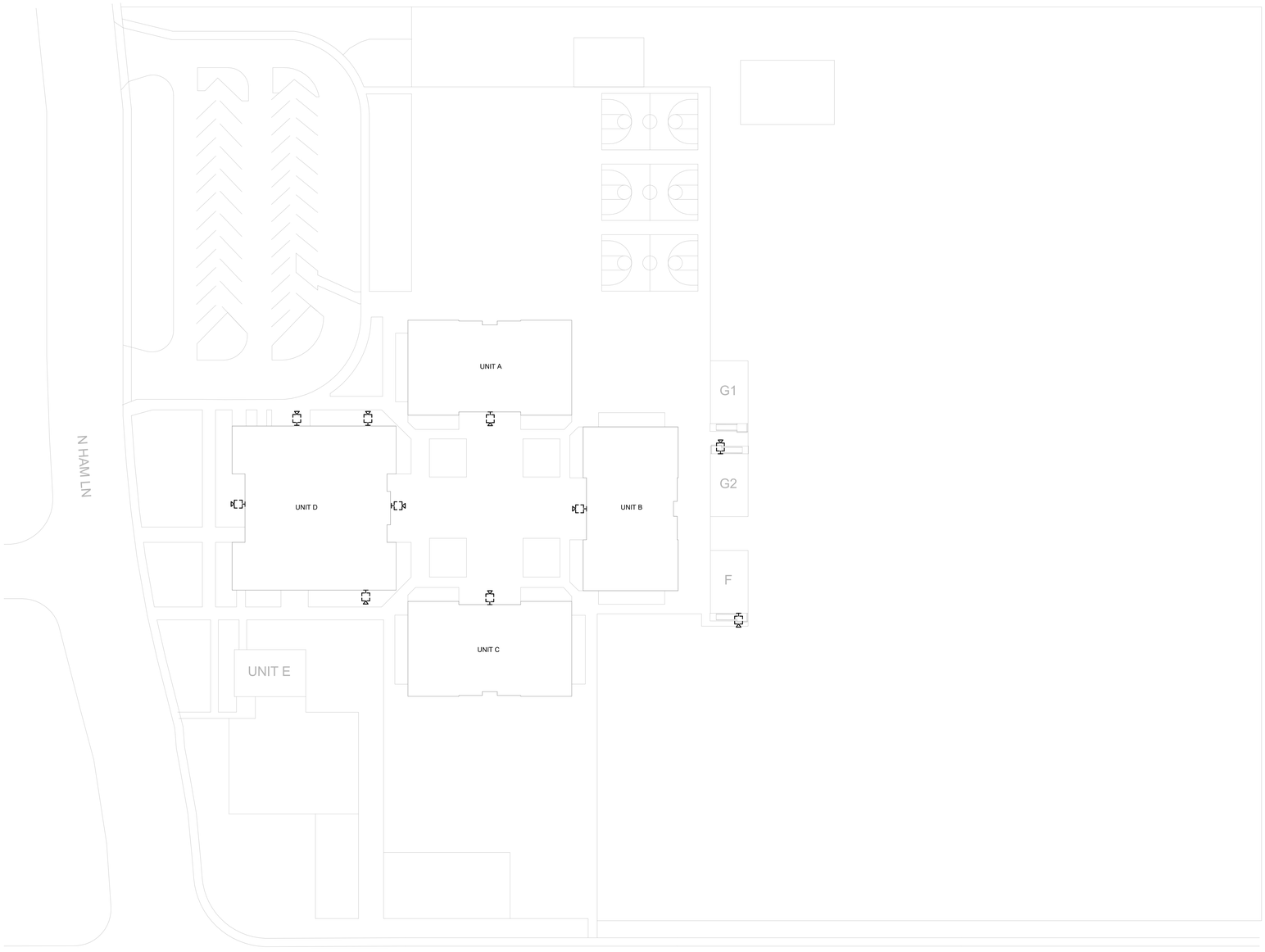
REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE:
DATE: 2019.12.20
TITLE: FIRE ALARM CALCULATIONS
DRAWING NO. E4.00



1 FIRE ALARM DEMO SITE PLAN

SCALE: 1/32" = 1'-0"

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Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

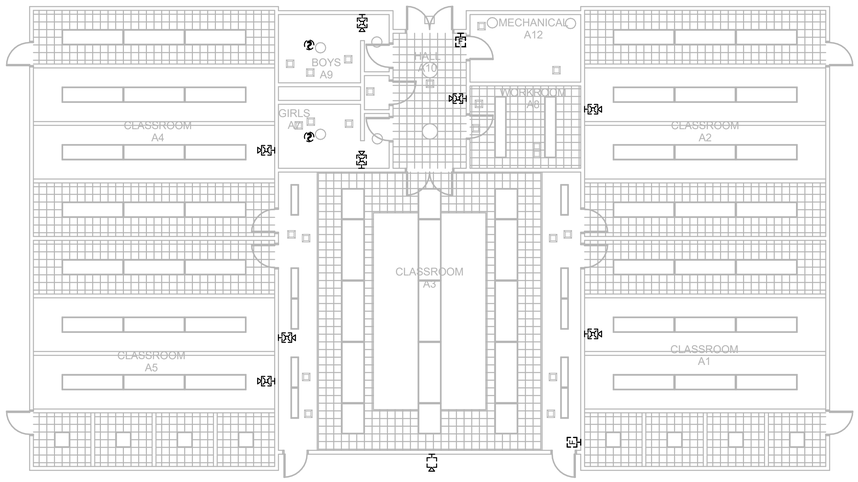
DESIGNER: Designer

SCALE: 1/32" = 1'-0"

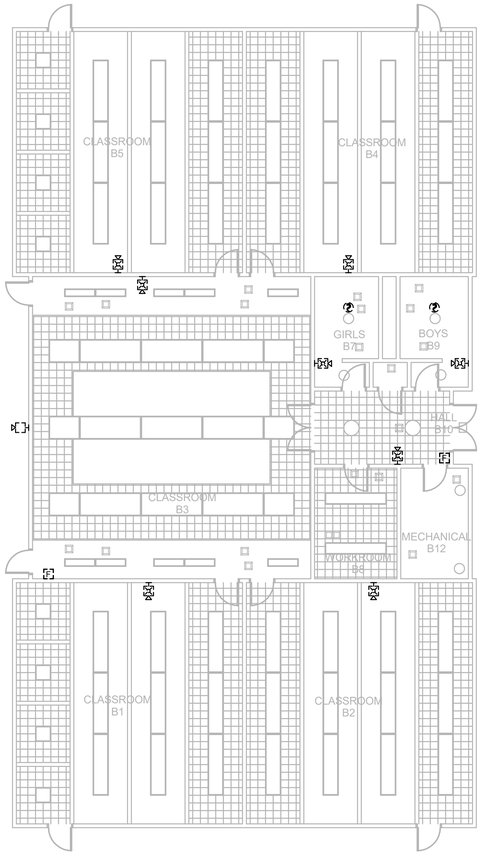
DATE: 2019.12.20

TITLE:
FIRE ALARM DEMO PLAN - SITE PLAN

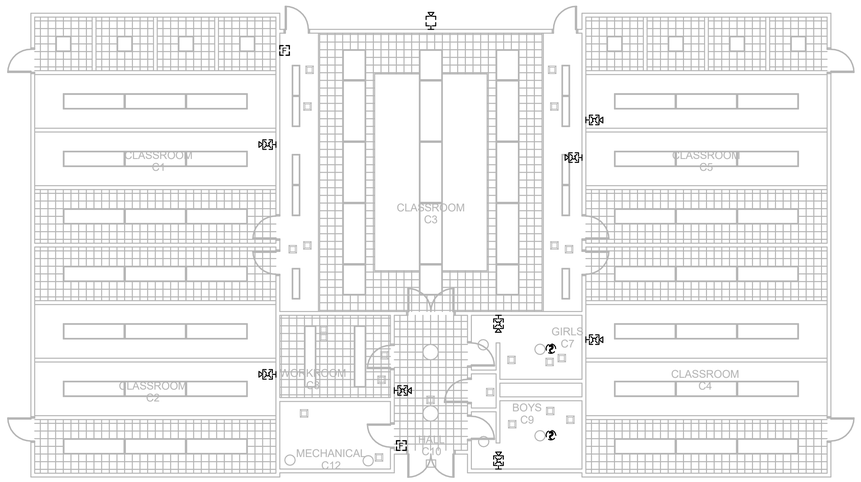
DRAWING NO.
ED1.00



1 Building A Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"



2 Building B Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"



3 Building C Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. TO REMOVE ALL UNUSED DEVICES, CIRCUITRY AND CONDUIT BACK TO SOURCE.

B. WHEN A DEVICE IS REMOVED FROM AN EXISTING WALL WHICH WILL REMAIN, PATCH WALL TO MATCH EXISTING OR NEW FINISH.

C. WHERE EXISTING FIRE ALARM DEVICES ARE TO BE REMOVED, THE CONTRACTOR SHALL ALSO REMOVE ALL CONDUCTORS SERVING THE DEVICE. ABANDONED CONDUITS AND BOXES CAN BE RE-USED TO PULL NEW CONDUCTORS THROUGH FOR SERVICE DEVICES DOWN STREAM. DO NOT SPLICE IN ABANDONED DEVICE BOXES.

D. REMOVE ALL UNUSED FIRE ALARM CONTROL PANELS, BOOSTER PANELS AND REMOTE ANNUNCIATORS.

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SS ☐ FLS ☑ ACS ☐
DATE: 02/27/2020

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SS____ FLS____ ACS____
DATE:____

The Engineering Enterprise
CONSULTING ENGINEERS
1125 HIGH STREET
AUBURN, CA 95603
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015497
Exp. 06/30/21
STATE OF CALIFORNIA

Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 1/8" = 1'-0"
DATE: 2019.12.20
TITLE: FIRE ALARM DEMO PLAN - A, B & C
DRAWING NO. ED1.01

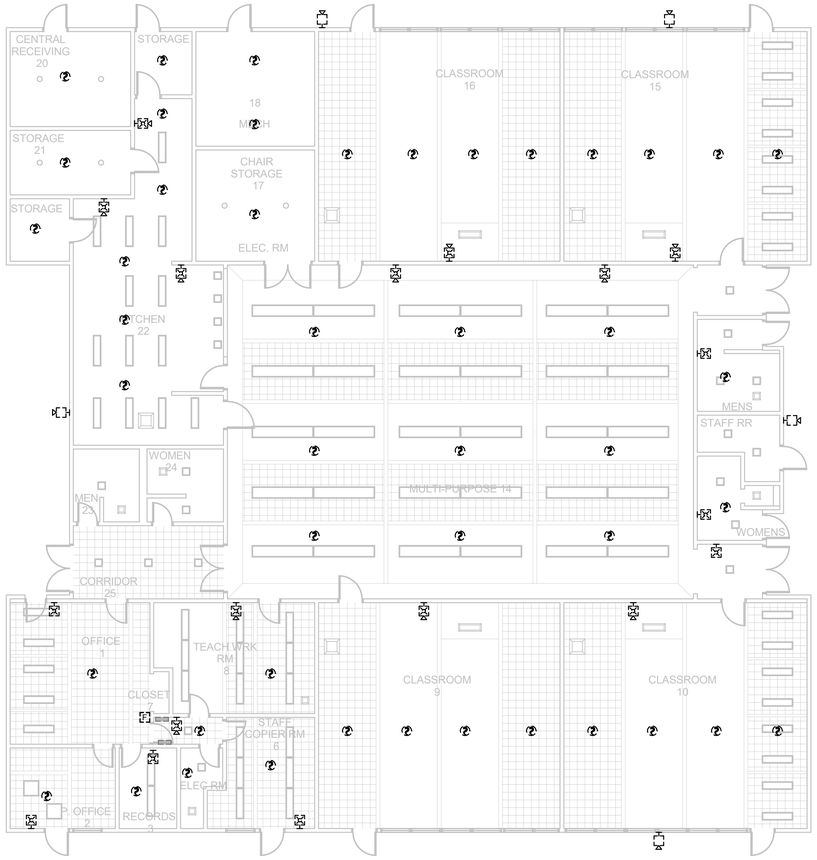
GENERAL SHEET NOTES

A. TO REMOVE ALL UNUSED DEVICES, CIRCUITRY AND CONDUIT BACK TO SOURCE.

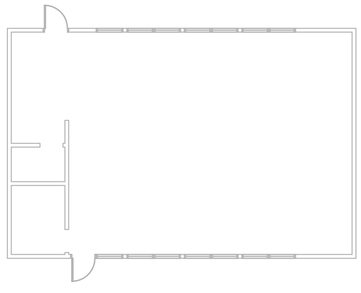
B. WHEN A DEVICE IS REMOVED FROM AN EXISTING WALL WHICH WILL REMAIN, PATCH WALL TO MATCH EXISTING OR NEW FINISH.

C. WHERE EXISTING FIRE ALARM DEVICES ARE TO BE REMOVED, THE CONTRACTOR SHALL ALSO REMOVE ALL CONDUCTORS SERVING THE DEVICE. ABANDONED CONDUITS AND BOXES CAN BE RE-USED TO PULL NEW CONDUCTORS THROUGH FOR SERVICE DEVICES DOWN STREAM. DO NOT SPLICE IN ABANDONED DEVICE BOXES.

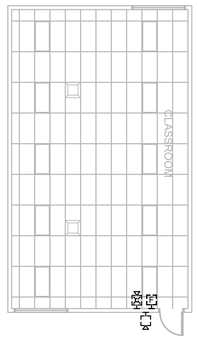
D. REMOVE ALL UNUSED FIRE ALARM CONTROL PANELS, BOOSTER PANELS AND REMOTE ANNUNCIATORS.



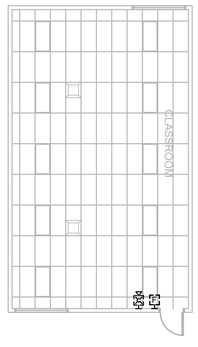
1 Building D Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"



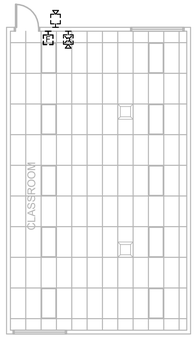
2 Building E Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"



3 Portable F Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"



4 Portable G1 Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"



5 Portable G2 Fire Alarm Demo Plan
SCALE: 1/8" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015491
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Lakewood Elementary School
1100 N Ham Ln, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 1/8" = 1'-0"
DATE: 2019.12.20
TITLE: FIRE ALARM DEMO PLAN - D, E & PORTABLES F, G1 & G2
DRAWING NO. ED1.02

VINEWOOD ELEMENTARY SCHOOL

1600 W. Tokay St., Lodi, CA 95242

FIRE ALARM REPLACEMENT PROJECT

CODE INFORMATION

THE INTENT OF THE CONSTRUCTION DOCUMENTS IS REPLACE EQUIPMENT IN ACCORDANCE WITH THE CBC 2016. SHOULD ANY CONDITION DEVELOP NOT COVERED BY THE CONSTRUCTION DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH THE CBC 2016, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.

ANCHORAGE AND SUPPORTS OF ALL EQUIPMENT TO BE INSTALLED, AS A PART OF THIS PROJECT SHALL BE DETAILED ON CONSTRUCTION DOCUMENTS, EXCEPT THOSE EXEMPT BY 2016 CBC SECTION 1616A.1.18. EQUIPMENT SUPPORTS AND ANCHORAGE SHALL BE APPROVED BY THE APPROPRIATE DESIGN PROFESSIONAL OF RECORD AND DSA AS A PART OF FIELD REVIEWS/OBSERVATIONS. THE INSPECTOR OF RECORD (IOR) SHALL ASSURE THAT THE ABOVE REQUIREMENTS ARE ENFORCED.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

2016 CALIFORNIA ADMINISTRATIVE CODE (CAC)
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2016 CALIFORNIA BUILDING CODE (CBC)
PART 2, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL BUILDING CODE (IBC)

2016 CALIFORNIA ELECTRICAL CODE (CEC)
PART 3, TITLE 24, CCR
BASED ON THE 2014 NATIONAL ELECTRICAL CODE (NEC)

2016 CALIFORNIA MECHANICAL CODE (CMC)
PART 4, TITLE 24, CCR
BASED ON THE 2015 UNIFORM MECHANICAL CODE (UMC)

2016 CALIFORNIA PLUMBING CODE (CPC)
PART 5, TITLE 24, CCR
BASED ON THE 2015 UNIFORM PLUMBING CODE (UPC)

2016 CALIFORNIA FIRE CODE (CFC)
PART 9, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL FIRE CODE (IFC)

2016 NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE

COMPLIANCE WITH 2016 CALIFORNIA FIRE CODE, CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.

FIRE ALARM SCOPE OF WORK

PROVIDE A MANUALLY AND AUTOMATICALLY ACTIVATED FIRE ALARM SYSTEM INCLUDING FACP, VOICE AMPLIFIERS, POWER SUPPLIES, ANNOUNCING MICROPHONE, INITIATION, NOTIFICATION, CONTROL AND MONITORING DEVICES AS SHOWN ON PLANS AND SPECIFICATIONS.

FIRE ALARM DESCRIPTION

THIS PROJECT IS TO REPLACE THE EXISTING FIRE ALARM PANELS, INITIATING DEVICES, NOTIFICATION DEVICES, MODULES, POWER SUPPLIES AND REMOTE ANNUNCIATOR PANEL WITH A NEW GAMEWELL E3 FIRE ALARM SYSTEM WITH EMERGENCY VOICE EVACUATION.

ALL EXISTING PATHWAY WILL BE RE-USED WHERE POSSIBLE AND NEW WHERE REQUIRED. NEW PATHWAY WILL BE PROVIDED IN AREAS WHERE CABLE CAN NOT BE CONCEALED ABOVE CEILING.

CABLE ABOVE CEILING WHEN NOT IN EXISTING CONDUIT WILL BE FREE AIR AND SUPPORTED EVERY 48" WITH J-HOOKS, PAINTED RED.

NEW DEVICE BOXES WILL BE REQUIRED AT ALL NEW DEVICES. WHERE EXISTING DEVICE BOXES ARE LOCATED AND A DEVICE IS NOT REQUIRED, THEN PROVIDE COVER PLATES. REMOVE EXISTING DEVICE BOXES WHEN ADDING A NEW DEVICE.

DEMOLISH ALL OLD CABLE, FIRE ALARM COMPONENTS AND BACK BOXES FROM SITE.

ALL CABLE AND COMPONENTS WILL BE NEW.

THIS PROJECT IS TO REPLACE EXISTING FIRE ALARM HEAD END UNIT AND ALL ASSOCIATED DEVICES.

FIRE ALARM SYSTEM: CLASS B
IDC: CLASS B
SLC CIRCUIT: CLASS B
NOTIFICATION CIRCUIT: CLASS B

PROJECT TEAM

OWNER

LODI UNIFIED SCHOOL DISTRICT
1305 E. VINE ST.
LODI, CA 95240

CONTACT: LEONARD KAHN (209)331-7225
E-MAIL CONTACT: VBRUM@LODIUSD.NET

ELECTRICAL ENGINEER:

THE ENGINEERING ENTERPRISE
1125 HIGH ST.
AUBURN, CA 95603

CONTACT: SCOTT WHEELER: 530-305-927-5784
FAX: 530-886-8557
EMAIL: SCOTT@ENGENT.COM

CONTACT: JESSE WHEELER: 530-927-5630
FAX: 530-886-8557
EMAIL: JESSE.WHEELER@ENGENT.COM

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET NAME	SCHEMATIC DESIGN	DESIGN DEVELOPMENT	DSA SUBMISSION
G0.00	COVER SHEET			•
E0.00	FIRE ALARM SYMBOLS, NOTES, AND MATRIX			•
E0.01	FIRE ALARM MATRIX, SCHEDULE & NOTES			•
E1.00	SITE PLAN			•
E2.00	FIRE ALARM PLAN - NEW A, NEW B & PORTABLES 1-4			•
E2.01	FIRE ALARM PLAN - ADMIN, D, E, & F			•
E3.00	FIRE ALARM RISER			•
E4.01	FIRE ALARM CALCULATIONS			•
ED1.00	FIRE ALARM DEMO PLAN - SITE PLAN			•
ED1.01	FIRE ALARM DEMO PLAN - NEW A, NEW B & PORTABLES 1-4			•
ED1.02	FIRE ALARM DEMO PLAN - A, D, E, & F			•

DSA ANCHORAGE AND BRACING NOTES

DEFERRED APPROVALS

N/A

NOTES

1. THE FIRE ALARM SYSTEM SHALL CONFORM TO 2016 CALIFORNIA ELECTRICAL CODE (CEC) ARTICLE 760 AND 2016 CALIFORNIA FIRE CODE (CFC) SECTION 907.
2. PROVIDE CALIFORNIA STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM INCLUDING MANUFACTURER CUT SHEETS FOR REVIEW.
3. BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION THE INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE DSA PROJECT INSPECTOR TO THE EFFECT THAT THE SYSTEM HAS BEEN INSTALLED AND TESTED IN ACCORDANCE WITH THE (2016) NFPA 72 SECTION 14.4.1.
4. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE DSA PROJECT INSPECTOR.
5. PROVIDE A RECORD OF COMPLETION PER CBC 907.7.2.
6. AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AND CBC 907.6.5.2. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX OR UUIS BY UL OR SHALL MEET THE REQUIREMENTS OF FM STANDARD 3011.
7. TEST, INSPECTION AND MAINTENANCE SHALL COMPLY WITH NFPA 72 CHAPTER 14 REQUIREMENTS.
8. EACH BUILDING TO BE A SEPARATE SPEAKER ZONE. (CFC, 907.6.3).
9. THE EXISTING SYSTEM SHALL REMAIN IN SERVICE UNTIL THE NEW SYSTEM IS INSTALLED OR THAT A FIRE WATCH IN COMPLIANCE WITH THE CALIFORNIA FIRE CODE WILL BE PROVIDED.

EXISTING BUILDING DATA

CAMPUS BUILDING SQUARE FOOTAGE:	35,006
OCCUPANCY GROUP:	E: K-6
FIRE SPRINKLER:	BLDGS., NONE
YEAR CONSTRUCTED:	1966
FLOOR AREAS:	NO PROPOSED CHANGE

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No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Vinewood Elementary School
1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 12" = 1'-0"
DATE: 2019.12.20
TITLE: COVER SHEET
DRAWING NO. G0.00

SYMMBOLS LIST

FIRE ALARM

	SMOKE DETECTOR INITIATING DEVICE, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
	SMOKE DETECTOR INITIATING DEVICE, WALL MOUNTED IN FLUSH JUNCTION BOX, MAXIMUM 6" BELOW CEILING.
	SMOKE DETECTOR INITIATING DEVICE, MOUNTED TO STRUCTURE ABOVE SUSPENDED CEILING IN SURFACE JUNCTION BOX OR SUSPENDED IN JUNCTION BOX IN FRONT OF RETURN AIR FIRE/SMOKE DAMPERS.
	SMOKE DETECTOR INITIATING DEVICE, DUCT-MOUNTED TYPE WITH SAMPLING TUBE, LOCATED AT SUPPLY AIR FANS 2000cfm AND LARGER.
	SMOKE DETECTOR INITIATING DEVICE, IN-DUCT MOUNTED TYPE AT DUCTED SUPPLY AIR FIRE/SMOKE DAMPERS.
	PROJECTED BEAM SMOKE DETECTOR INITIATING DEVICES TO INCLUDE TRANSMITTER, RECEIVER AND REMOTE INDICATOR STATION, WALL MOUNTED IN FLUSH JUNCTION BOX BELOW BEAM DETECTOR AT +42" AFF. BEAM DETECTORS ARE EITHER CEILING OR WALL MOUNTED 6" BELOW CEILING.
	HEAT DETECTOR INITIATING DEVICE, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
	HEAT DETECTOR INITIATING DEVICE, WALL MOUNTED IN FLUSH JUNCTION BOX, MAXIMUM 6" BELOW CEILING.
	HEAT DETECTOR INITIATING DEVICE, MOUNTED TO STRUCTURE ABOVE SUSPENDED CEILING IN SURFACE JUNCTION BOX.
	MANUAL PULL STATION INITIATING DEVICE, WALL MOUNTED AT +48" UON.
	SPRINKLER SYSTEM WATER FLOW SWITCH, NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM.
	SPRINKLER SYSTEM TAMPER SWITCH, NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM.
	SPRINKLER SYSTEM POST INDICATING VALVE 'PIV', NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM. INCLUDE A REMOTE MOUNTED ADDRESSABLE MONITORING MODULE AT PIV.
SM	REMOTE MOUNTED SINGLE INPUT, ADDRESSABLE, MONITORING MODULE FOR INITIATING CIRCUIT CONNECTION.
DM	REMOTE MOUNTED DUAL INPUT, ADDRESSABLE, MONITORING MODULE FOR INITIATING CIRCUIT CONNECTION.
CR	REMOTE MOUNTED PROGRAMMABLE CONTROL RELAY MODULE FOR ADDRESSABLE CONTROL.
DPS	DIFFERENTIAL PRESSURE SWITCH, NIEC. SYMBOLS DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM TO ANNUNCIATE FAN OPERATION. INCLUDE A REMOTE MOUNTED ADDRESSABLE MONITORING MODULE AT EACH LOCATION.
EOL	END-OF-LINE RESISTOR.
CT	CURRENT TRANSFORMER FOR MONITORING AVAILABLE POWER.
FRAP	FIREMANS REMOTE ANNUNCIATOR PANEL FRAP, FLUSH WALL MOUNTED, +42" UON.
	MAGNETIC TYPE DOOR HOLD OPEN/RELEASE DEVICE, WALL MOUNTED, NIEC. SYMBOL DENOTES INTERFACE FOR POWER AND CONTROL CONNECTIONS FROM FIRE ALARM SYSTEM.
	DOOR HOLD OPEN/RELEASE DEVICE INTEGRATED IN DOOR HARDWARE CLOSURE EQUIPMENT, NIEC. SYMBOL DENOTES INTERFACE FOR POWER AND CONTROL CONNECTIONS FROM FIRE ALARM SYSTEM.
	AUDIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER.
	VISIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	AUDIBLE/VISIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	AUDIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX.
	VISIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	AUDIBLE/VISIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX. NUMBER ASSOCIATED WITH 'cd' REPRESENTS CANDELA RATING OF STROBE.
	FIRE ALARM BELL FOR SPRINKLER FLOW ANNUNCIATOR, NIEC, POWERED AND INSTALLED BY ELECTRICAL, WALL MOUNTED ON EXTERIOR OF BUILDING.
	THERMISTOR SENSOR DEVICE IN FSAE LOBBIES FOR TEMPERATURE MONITORING, WALL MOUNTED 6" BELOW CEILING.
	SMOKE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
	SMOKE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, WALL MOUNTED MAXIMUM 6" BELOW CEILING IN FLUSH JUNCTION BOX.
	COMBINATION SMOKE AND CARBON MONOXIDE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
	COMBINATION SMOKE AND CARBON MONOXIDE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, WALL MOUNTED MAXIMUM 6" BELOW CEILING IN FLUSH JUNCTION BOX.
	REMOTE 2-WAY COMMUNICATION STATION, WALL MOUNTED, +42" AFF.

FIRE ALARM SYSTEM DESCRIPTION

SCOPE OF THIS PROJECT IS TO REPLACE THE EXISTING FIRE ALARM SYSTEM WITH A NEW GAMEWELL VOICE EVACUATION SYSTEM. ALL EXISTING PATHWAY, AND DEVICE BOXES SHALL BE REUSED WHERE POSSIBLE. NEW PATHWAY WILL BE PROVIDED IN AREAS WHERE CABLE CAN NOT BE CONCEALED ABOVE CEILING. CABLE ABOVE CEILING WHEN NOT IN EXISTING CONDUIT WILL BE FREE AIR. NEW DEVICE BOXES WILL BE PROVIDED WHERE THE EXISTING BACK BOXES CAN NOT BE RE-USED OR ARE NOT LOCATED IN THE PROPER LOCATION OF THE NEW DEVICE. ALL SPEAKER CABLE AND COMPONENTS WILL BE NEW.TX THIS PROJECT IS TO REPLACE EXISTING FIRE ALARM CONTROL UNIT AND DEVICES AS SHOWN ON PLANS.

FIRE ALARM SYSTEM: CLASS B
IDC: CLASS B
SLC CIRCUIT: CLASS B
NOTIFICATION CIRCUIT: CLASS B

ABBREVIATIONS

A	AMPERES	LCP	LIGHTING CONTROL PANEL
AFI	ARC FAULT CIRCUIT INTERRUPTER	MBGB	MAIN BUILDING GROUND BUS
AF	AMPERE OVERCURRENT FRAME SIZE (WHEN APPLIED TO CIRCUIT BREAKERS) OR AMPERE FUSE SIZE (WHEN APPLIED TO FUSES)	MCB	MAIN CIRCUIT BREAKER
		MCC	MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MLO	MAIN LUGS ONLY
AIC	ASYMMETRIC INTERRUPTING CURRENT	MT	EMPTY
AL	ALUMINUM	MTS	MANUAL TRANSFER SWITCH
AT	AMPERE OVERCURRENT TRIP (WHEN APPLIED TO CIRCUIT BREAKERS)	(N)	NEW
		NC	NORMALLY CLOSED
ATS	AUTOMATIC TRANSFER SWITCH	NF	NON-FUSED
BAS	BUILDING AUTOMATION SYSTEM	NIEC	NOT IN ELECTRICAL CONTRACT
BPS	BOLTED PRESSURE CONTACT SWITCH	NO	NORMALLY OPEN
C	CONDUIT	NTS	NOT TO SCALE
CCTV	CLOSED CIRCUIT TELEVISION	OC	ON CENTER
CEC	CALIFORNIA ELECTRICAL CODE	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CL	CURRENT LIMITING CIRCUIT BREAKER OR FUSE	PDZ	PRIMARY DAYLIGHT ZONE
CP	CIRCULATION PUMP	PNL	PANEL
CT	CURRENT TRANSFORMER	PQM	POWER QUALITY METER
CU	COPPER	PT	POTENTIAL TRANSFORMER
DF	DRINKING FOUNTAIN	PVC	POLYVINYL CHLORIDE
(E)	EXISTING TO REMAIN	(R)	EXISTING TO BE REMOVED
EC	ELECTRICAL CONTRACTOR	(RR)	REMOVE AND RELOCATE
EF	EXHAUST FAN	SAD	SEE ARCHITECTURAL DRAWINGS
EP	EXPLOSION PROOF	TC	TIME CLOCK
EPO	EMERGENCY POWER OFF	TP	TWISTED-PAIR
EMT	ELECTRICAL METALLIC TUBING	SDZ	SECONDARY DAYLIGHT ZONE
EWH	ELECTRIC WATER HEATER	SPD	SURGE PROTECTION DEVICE
F	FUSED	TX	TRANSFORMER
(F)	FUTURE	TYP	TYPICAL
FACP	FIRE ALARM CONTROL PANEL	UON	UNLESS OTHERWISE NOTED
FFCP	FIREMAN'S FAN CONTROL PANEL	UPS	UNINTERRUPTIBLE POWER SUPPLY
FLA	FULL LOAD AMPERES	V	VOLTS
FMC	FLEXIBLE METAL CONDUIT	VA	VOLTS-AMPS
FSD	FIRE/SMOKE DAMPER	VFD	VARIABLE FREQUENCY DRIVE
FRAP	FIREMAN'S REMOTE ANNUNCIATOR PANEL	VM	VENDING MACHINE
		WAP	WIRELESS ACCESS POINT
G	GROUND	WP	WEATHERPROOF
GB	GROUND BUS	2SP	TWO SPEED
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	1Ø	1-PHASE
GND	GROUND	3Ø	3-PHASE
GRAP	GENERATOR REMOTE ANNUNCIATOR PANEL	1P	1-POLE
GRC	GALVANIZED RIGID CONDUIT	2P	2-POLE
HNC	HOME NETWORK CABINET	3P	3-POLE
HPC	HIGH PRESSURE CONTACT SWITCH	3W	3-WIRE
IG	ISOLATED GROUND	4W	4-WIRE
IMC	INTERMEDIATE METAL CONDUIT		

APPLIANCES

DO	DOUBLE OVEN	MW	MICROWAVE
DW	DISHWASHER	RF	REFRIGERATOR
ED	ELECTRIC DRYER	RH	RANGE HOOD
EO	ELECTRIC OVEN/RANGE	UR	UNDERCOUNTER REFRIGERATOR
GD	GARBAGE DISPOSER	WC	WINE COOLER
GR	GAS RANGE	WM	WASHING MACHINE

RACEWAYS

	CONDUIT RUN EXPOSED ON WALL OR CEILING.
	CONDUIT RUN CONCEALED IN SLAB, UNDER SLAB OR UNDERGROUND.
	CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING.
	CONDUIT HOMERUN, CONTINUOUS RUN TO PANEL OR EQUIPMENT CABINET. HOMERUN CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT TURNED UP, CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT TURNED DOWN, CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT CAPPED OR STUBBED WITH INSULATED BUSHINGS, CAN OCCUR ON ANY OF THE ABOVE ROUTING CONDITIONS.
	CONDUIT SLEEVE, WITH INSULATING BUSHINGS.
	FLEXIBLE METALLIC CONDUIT, EQUIPMENT CONNECTION.
	CROSSMARKS ON BRANCH CIRCUIT CONDUIT RUNS INDICATE THE QUANTITY OF CONDUCTORS AS FOLLOWS (GROUND CONDUCTORS ARE NOT NOTED, BUT SHOULD BE INCLUDED IN EVERY CONDUIT WITH POWER CONDUCTORS): 1. NO CROSSMARKS INDICATES TWO #12 AWG CONDUCTORS, UON. 2. THREE TO SIX CROSSMARKS INDICATES THE QUANTITY OF #12 AWG CONDUCTORS, UON. 3. SEVEN OR MORE CROSSMARKS INDICATES THE QUANTITY OF #10 AWG CONDUCTORS, UON.
	TWO PIECE SURFACE RACEWAY; TYPE, DEVICE SPACING AND MOUNTING AS NOTED ON PLANS.
	CABLE TRAY, CABLE RUNWAY OR LADDER RACK SUSPENDED FROM STRUCTURE ABOVE. REFER TO PLANS FOR SIZE AND MOUNTING.

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REVISIONS

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DESIGNER: Designer
SCALE:
DATE: 2019.12.20
TITLE: FIRE ALARM SYMBOLS, NOTES, AND MATRIX
DRAWING NO. E0.00

FIRE ALARM SYSTEM MATRIX

RESULT OF OPERATION	SMOKE / BEAM DETECTOR	CO SMOKE DETECTOR	HEAT DETECTOR	PULL STATION	ANSUL	DUCT DETECTOR	KITCHEN/HEAT DETECTOR	SYSTEM RESET	SIGNAL SILENCE	OPEN/SHORT	POWER LOSS
FACP ALARM	X		X	X	X		X				
ANNUNCIATE ALARM	X		X	X	X		X				
OFF SITE REPORTING ALARM	X		X	X	X		X				
FACP TROUBLE										X	X
ANNUNCIATE TROUBLE										X	X
OFF SITE REPORTING TROUBLE										X	X
AUDIBLE ALARM	X		X	X	X		X				
VISUAL ALARM	X		X	X	X		X				
FACP SUPERVISORY		X				X					
ANNUNCIATE SUPERVISORY		X				X					
OFF SITE REPORTING SUPERVISORY		X				X					
SOUNDER BASE		X									
DEACTIVATE VISUALS									X		
DEACTIVATE AUDIBLES									X		
SYSTEM NORMAL								X			
HVAC SHUTDOWN						X					
DAMPER CLOSURE						X					
ROLL DOWN DOOR							X				
AUDIO RACK SHUTDOWN	X		X	X	X		X				

FIRE ALARM SYSTEM CABLE SCHEDULE

REQUIRED CABLES	CABLE TAG	CABLE	NO. OF CONDUCTORS	COLOR	AWG	CABLE USE
X	A	GENESIS	2(1PR)	RED/BLACK	#18	BUILDING INITIATION (SLC)
X	B	GENESIS	2(1PR)	RED/BLACK	#12	NOTIFICATION (NAC)
X	S	GENESIS	2(1PR)	RED/BLACK	#16	VOICE NOTIFICATION
X	F	GENESIS	2(1PR)	RED/BLACK	#12	24 VDC POWER
N/A	C	AQUA SEAL	2(1PR)	RED/BLACK	#18	UG BUILDING INITIATION (SLC)
N/A	D	AQUA SEAL	2(1PR)	RED/BLACK	#12	UG NOTIFICATION (NAC)
N/A	E	AQUA SEAL	2(1PR)	RED/BLACK	#16	UG VOICE NOTIFICATION
N/A	G	AQUA SEAL	2(1PR)	RED/BLACK	#12	UG 24 VDC POWER

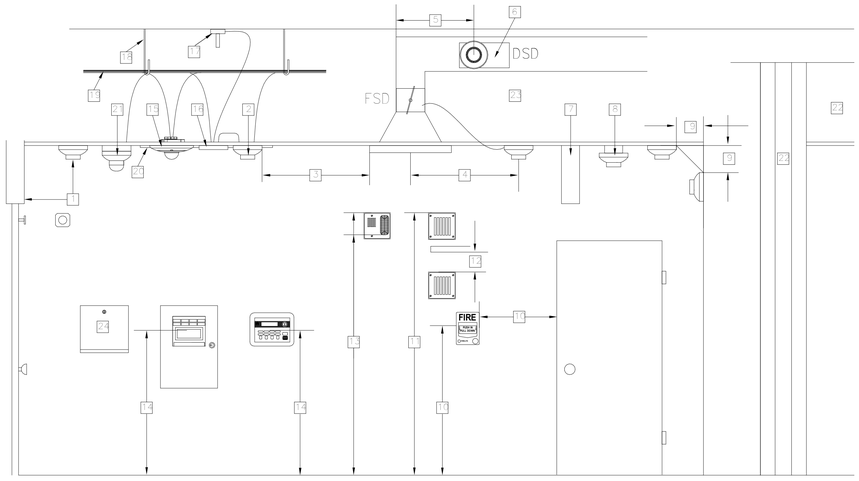
NUMBERED SHEET NOTES

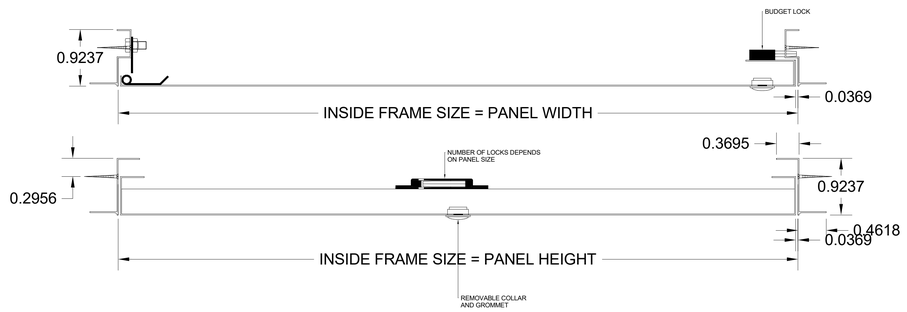
1. MOUNT DOOR HOLDER SMOKE DETECTOR MAXIMUM 3' FROM DOOR AND A MINIMUM OF 1'.
2. MAXIMUM DISTANCE BETWEEN SMOKE DETECTORS IS 30' AND 15' FROM WALLS, MAXIMUM DISTANCE FROM A CORNER IS 21' WITH CEILING LESS 10' OR LESS.
3. MOUNT SMOKE DETECTOR MINIMUM OF 3' AWAY FROM DIFFUSER VENT.
4. MOUNT SMOKE DETECTOR FOR FIRE SMOKE DAMPER (FSD) WITHIN 3' OF SUPPLY VENT.
5. DUCT SMOKE DETECTOR SHALL BE MOUNTED 6 TO 10 TIMES THE DIAMETER OF DUCT FROM BEND OR OBSTRUCTION.
6. WHERE DUCT SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS OR GREATER THAN 10' AFF, DETECTORS SHALL BE PROVIDED WITH A REMOTE INDICATOR OR SUPERVISORY INDICATION ACCEPTABLE WITH AUTHORITY HAVING JURISDICTION (AHJ). ALL HVAC GREATER THAN 2000cfm SHALL HAVE A DUCT DETECTOR IN THE SUPPLY AIR DUCT. GREATER THAN 15,000cfm SHALL HAVE ONE IN BOTH SUPPLY AND RETURN AIR DUCTS. HOWEVER SHALL NOT BE REQUIRED WHERE THE ENTIRE SPACE SERVED BY THE AIR DISTRIBUTION SYSTEM IS PROTECTED BY SMOKE DETECTORS THAT TRIGGER HVAC SHUT-DOWN
7. BEAM POCKET SPOT DETECTOR ARE REQUIRED FOR BEAMS GREATER THAN 18" BELOW CEILING AND SPACED MORE THAN 8' ON CENTER. EACH BAY FORMED BY BEAM SHALL BE TREATED AS A SEPARATE AREA. BEAMS LESS THAN 12" IN DEPTH AND SPACED LESS THAN 8' ON CENTER SHALL HAVE DETECTORS INSTALLED ON THE BOTTOM OF THE BEAM.
   - 7.1. OR, CEILINGS WITH BEAM DEPTHS LESS THAN 10 PERCENT OF THE CEILING HEIGHT, SMOOTH CEILING SPACING IS PERMITTED AND DETECTORS PLACED ON THE BOTTOM OF THE BEAM.
   - 7.2. BEAMS EQUAL TO OR GREATER THAN 10 PERCENT OF CEILING HEIGHT WITH BEAM SPACING GREATER THAN 40 PERCENT OF CEILING HEIGHT, SPOT DETECTORS SHALL BE LOCATED IN EACH CELL. NFPA 72 17.7.3.2.4.2
8. BEAMS PROJECTING LESS THAN 4" SHALL BE TREATED AS A SMOOTH CEILING.
9. SMOKE DETECTORS SHALL BE MOUNTED ON THE CEILING MINIMUM 4" FROM WALL, AND 4" MINIMUM TO 12" MAXIMUM FROM CEILING MOUNTED ON WALL.
10. MOUNT MANUAL PULL STATIONS AT 48" TO TOP OF BOX AFF, AND NO GREATER THAN 5' FROM DOOR.
11. MOUNT EXTERNAL HORN AT 90" MINIMUM AND 100" MAXIMUM TO THE TOP OF THE DEVICE.
12. FOR APPLICATIONS WHERE THE STRUCTURE IS BELOW 90", MOUNT HORN AS HIGH AS WITH A MINIMUM OF 6" CLEARANCE TO THE TOP OF THE DEVICE.
13. MOUNT HORN / SPEAKER STROBE AND STROBE ONLY THE THE ENTIRE LENS IS WITHIN 80" AND 96" AFF.
14. MOUNT FIRE ALARM CONTROL PANELS AND ANNUNCIATORS AT A MAXIMUM OF 60" TO THE TOP OF THE CONTROL PANEL OR KEY BOARDS. CBC 11B-308
15. CEILING MOUNTED HORN / SPEAKER STROBE
16. MONITOR MODULE
17. RATE ANTICIPATOR HEAT DETECTOR, MOUNTED IN ABOVE CEILING / ATTIC SPACE.
18. APPROVED WIRE MANAGEMENT, ie J-HOOK OR D-RING.
19. ABOVE CEILING CIRCUITS ROUTING IN AN ACCESSIBLE ATTIC SPACE.
20. NON-ACCESSIBLE CEILINGS MUST USE EITHER EMT OR APPROVED WIREMOLD RACEWAY, AS SHOWN ON PLANS.
21. MULTI-CRITERIA PHOTOELECTRIC SMOKE / CO DETECTOR WITH SOUNDER BASE. MOUNT IN AREAS WHERE FOSSIL FUEL IS USED.
22. SMOKE / HEAT DETECTION COVERAGE IS REQUIRED IN ALL COMBUSTIBLE AREAS, UNLESS:
    - 22.1. CEILING IS ATTACHED DIRECTLY TO T HE UNDERSIDE OF THE SUPPORTING BEAM OR ROOF DECK.
    - 22.2. CONCEALED SPACE IS ENTIRELY FILLED WITH NON-COMBUSTIBLE INSULATION.
    - 22.3. THE SMALL CONCEALED SPACE OVER ROOMS THAT DO NOT EXCEED 50 SQ. FT. IN AREA.
    - 22.4. SPACES FORMED BY FACING STUDS OR SOLID JOISTS IN WALLS, FLOORS, OR CEILINGS WHERE THE FACING STUD OR SOLID JOIST IS LESS THAN 6".

    INACCESSIBLE SPACES THAT DO NOT MEET THIS CRITERIA MUST BE MADE ACCESSIBLE AND DETECTION MUST BE INSTALLED. NFPA72 17.5.3.1.1
23. DETECTION FOR CONCEALED ACCESSIBLE SPACES ABOVE SUSPENDED CEILING USED AS A RETURN PLENUM SHALL BE PROVIDED AT EACH CONNECTION FROM RETURN AIR PLENUM AT CENTRAL AIR HANDLING UNIT. NFPA 72 17.5.3.1.4
24. WITH EVERY NEW FIRE ALARM SYSTEM A DOCUMENTATION CABINET SHALL BE INSTALLED AT THE FIRE ALARM CONTROL PANEL OR AT ANOTHER LOCATION APPROVED BY AHJ. THE CABINET SHALL BE PROMINENTLY LABELED "SYSTEM RECORD DOCUMENTS".

FIRE ALARM SYSTEM COMPONENT SCHEDULE

REQUIRED COMPONENTS	SYMBOL	EQUIPMENT/DEVICE	MANUFACTURER	MODEL / PART #	CSFM LISTING YEAR	CSFM LISTING NO.
X	FACP	FIRE ALARM CONTROL PANEL	GAMEWELL	E-3	6/30/2020	7165-1703:0125
X	AMP	AMPLIFIER	GAMEWELL	AM-50	6/30/2020	7165-1703:0125
X	BPS	REMOTE POWER BOOSTER	GAMEWELL	HPF24-S8	6/30/2020	7315-1637:0102
X		INTELLIGENT DUCT DETECTOR	GAMEWELL	XP95	6/30/2020	7272-1703:0155
N/A		INTELLIGENT HEAT DETECTOR	GAMEWELL	ATD-L2F	6/30/2020	7270-1703:0115
X		ATTIC HEAT DETECTOR	GAMEWELL	5622	6/30/2020	7270-1653:0167
X		PHOTO SMOKE DETECTOR	GAMEWELL	ASD-PL3	6/30/2020	7272-1703:0501
X		FIRE/CO DETECTOR WITH SOUNDER BASE	GAMEWELL SYSTEM SENSOR	MCS-COF B200S	6/30/2020 6/30/2020	7275-1703:0175 7300-1653:0213
X	BT BR	BEAM DETECTOR	GAMEWELL	ABD-2F	6/30/2020	7260-1703:0120
N/A	DM	DUAL MONITOR MODULE	GAMEWELL	AMM-2IF	6/30/2020	7300-1703:0107
X	SM	MONITOR MODULE	GAMEWELL	AMM-4F	6/30/2020	7300-1703:0102
X	IM	ISOLATION MODULE	GAMEWELL	M500X	6/30/2020	7300-1653:0103
X	CR	CONTROL RELAY	GAMEWELL	AOM-2RF	6/30/2020	7300-1703:0102
X	F	PULL STATION	GAMEWELL	MS-7	6/30/2020	7150-1703:0119
X		SPEAKER STROBE (CEILING)	SYSTEM SENSOR	SPSCWL	6/30/2020	7320-1653:0505
X		STROBE (CEILING)	SYSTEM SENSOR	SCWL	6/30/2020	7125-1653:0504
X		OUTDOOR SPEAKER	SYSTEM SENSOR	SPWK	6/30/2020	7320-1653:0201
N/A		SPEAKER STROBE (WALL)	SYSTEM SENSOR	SPSW	6/30/2020	7320-1653:0201
N/A		STROBE (WALL)	SYSTEM SENSOR	SW	6/30/2020	7125-1653:0156
X	EOLR	END-OF-LINE RELAY	SYSTEM SENSOR	EOLR-1	6/30/2020	7300-1653:0103
X	DOC	DOCUMENT BOX	SPACE AGE TECH	SRD-ACE-11	6/30/2020	7300-0553:0110





A E0.01 TYPICAL FIRE ALARM ACCESS DOOR DETAIL

FIRE ALARM NOTES

1. WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS,INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

STATE CALIFORNIA CODE OF REGULATIONS (CCR) 201 6 TITLE 24 CALIFORNIA BUILDING CODE
PART 2, 2016 CALIFORNIA BUILDING CODE (CBC), 201 5 IBC.
PART 3, 2016 CALIFORNIA ELECTRICAL CODE (CEC), 201 5 NEC.
PART 4, 2016 CALIFORNIA MECHANICAL CONDE (CMC), 201 5 UMC.
PART 5, 2016 CALIFORNIA PLUMBING CODE (CPC), 201 5 UPC.
PART 9, 2016 CALIFORNIA FIRE CODE (CFC) BASED ON 201 5 IFC.
2016 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 13, 72, 80, 90A, 99, AND 101.

2. INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTATION AND SPECIFICATIONS, INCLUDING STATE FIRE MARSHALL LISTING SHEETS FOR EACH COMPONENT OF THE SYSTEM HAS BEEN APPROVED BY DSA.
3. UPON COMPLETION OF INSTALLATION OF THE SYSTEMS, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF A DSA PROJECT INSPECTOR.
4. A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION.
5. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE ARCHITECT/ENGINEER OF RECORD.
6. DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND/ OR TESTING.
7. ALL PENETRATIONS THROUGH RATED ASSEMBLIES, REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITHIN THE SPECIFICATION WITHIN THE FIRE ALARM SECTION.
8. AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15DECIBLES (Dba) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 Dba ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIED SPACE WITHIN THE BUILDING.
9. AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.
10. THE CONTRACTOR SHALL ADJUST/INSTALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
11. VISUAL DEVICES SHOULD NOT EXCEED 2 FLASHES PER SECOND AND SHOULD NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELLA. VISUAL DEVICES WITHIN 55' FROM EACH OTHER SHALL BE SYNCHRONIZED.
12. UNDERGROUND AND EXTERIOR CONDUIT TO HAVE WATERTIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
13. ALL FIRE ALARM WIRING SHALL BE FLP OR FPLP (FIRE POWER LIMITED OR FIRE POWER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE THHN OR THWN.
14. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
15. SMOKE DETECTORS SHALL BE NOT CLOSER THAN 1' FROM SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION OF NEWLY INSTALLED FIRE ALARM DEVICES SHALL BE COVERED UNTIL AREA IS READY TO BE TURNED OVER TO THE OWNER.
16. ALL FIRE ALARM CIRCUITS ARE TO BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE THE CEILINGS, UNDER FLOORS AND IN WALLS IN A NEAT AND PROTECTED MANNER AS INDICATED ON THE DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
17. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO DEVICE SHALL EXCEED THE WEIGHT OF 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
18. A DEDICATED BRANCH CIRCUIT SHALL BE PROVIDED FOR FIRE ALARM EQUIPMENT. THIS CIRCUIT SHALL BE ENERGIZED FROM A COMMON USE AREA PANEL AND SHALL HAVE OTHER OUTLETS. THE BREAKER SHALL HAVE A RED LOCKING DEVICE TO BLOCK THE HANDLE IN THE "ON" POSITION. THE CIRCUIT BREAKER SHALL BE LABELED "FIRE ALARM CIRCUIT CONTROL". CIRCUIT ID TO BE LABELED AT FIRE PANEL/EXPANDERS.
19. THE INSTALLER CONTRACTOR SHALL PROVIDE A RECORD OF COMPLETION PER NFPA 72, FIGURE 10.18.2.1.1.
20. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
21. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
22. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS. AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AND CBC 907.6.5.2. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX OR UUIS BY UL OR SHALL MEET THE REQUIREMENTS OF FM STANDARD 3011.
23. BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION THE INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE DSA PROJECT INSPECTOR TO THE EFFECT THAT THE SYSTEM HAS BEEN INSTALLED AND TESTED IN ACCORDANCE WITH THE (2016) NFPA 72 SECTION 14.4.1.
24. TEST, INSPECTION AND MAINTENANCE SHALL COMPLY WITH NFPA 72 CHAPTER 14 REQUIREMENTS.

FIRE ALARM SYSTEM DESCRIPTION

SCOPE OF THIS PROJECT IS TO PROVIDE A NEW FIRE ALARM PANEL WITH NEW VOICE EVACUATION PANEL, INCLUDING FACP, VOICE AMPLIFIERS, POWER SUPPLIES, MICROPHONE, INITIATION, NOTIFICATION AND CONTROL DEVICES AS SHOWN ON PLANS AND SPECIFICATIONS. PROVIDE ALL NEW CABLING; CABLING SHALL BE INSTALLED IN CONDUIT OR SURFACE RACEWAY, OR EXPOSED IN ACCESSIBLE CEILING SPACE.

FIRE ALARM SYSTEM: CLASS B
IDC: CLASS B
SLC CIRCUIT: CLASS B
NOTIFICATION CIRCUIT: CLASS B

IDENTIFICATION STAMP
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REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 02/28/2020

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DATE:_____

The Engineering Enterprise
CONSULTING ENGINEERS
1125 HIGH STREET
AUBURN, CA 95603
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015497
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Vinewood Elementary School
1600 W Tokay St, Lodi, CA 95242

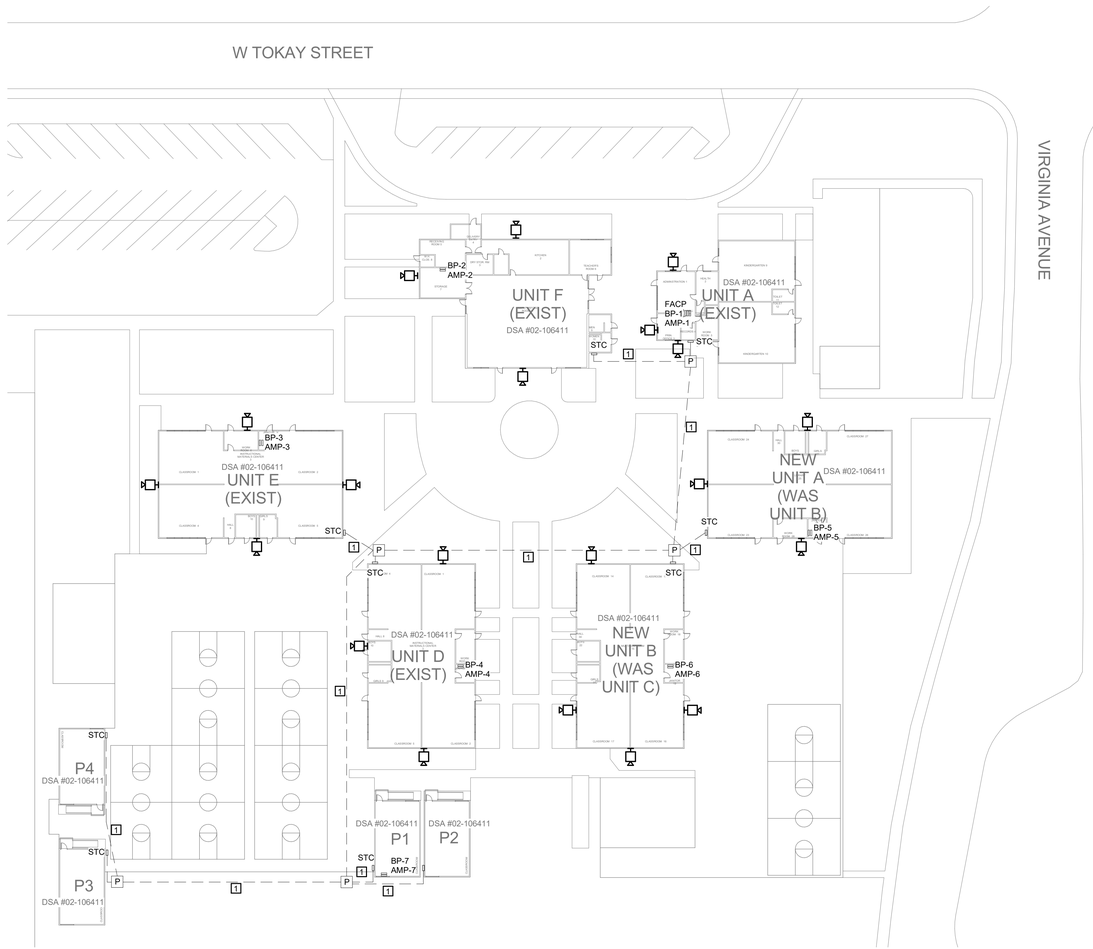
REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 12" = 1'-0"
DATE: 2019.12.20
TITLE: FIRE ALARM MATRIX, SCHEDULE & NOTES
DRAWING NO. E0.01

NUMBERED SHEET NOTES

1 EXISTING PATHWAYS.



1 SITE PLAN

SCALE: 1/32" = 1'-0"

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1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

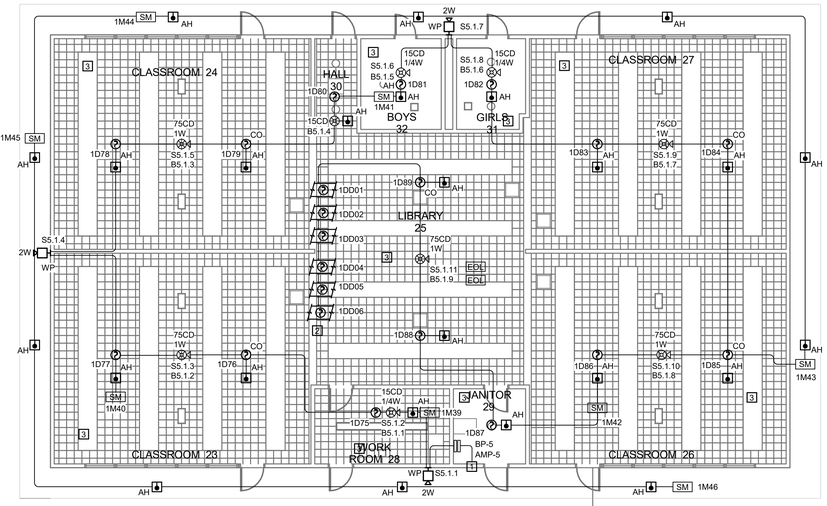
DESIGNER: Designer

SCALE: 1/32" = 1'-0"

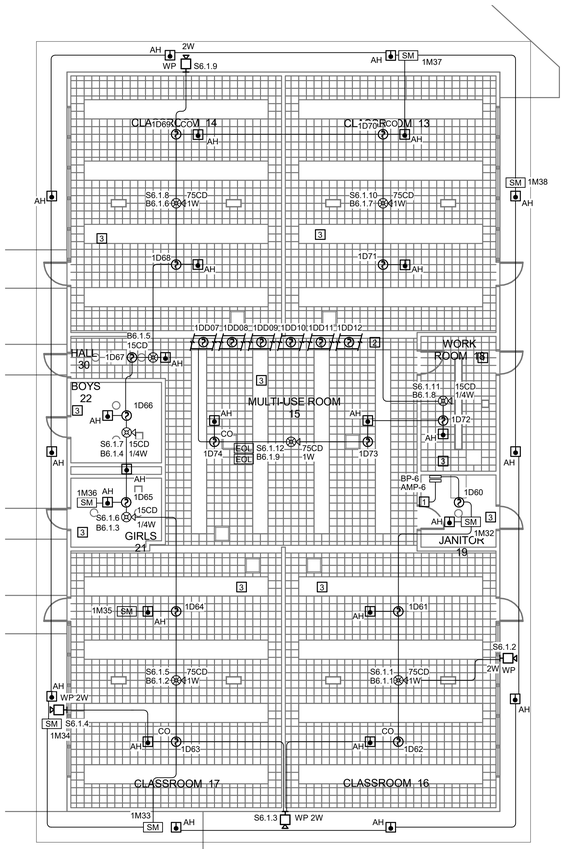
DATE: 2019.12.20

TITLE: SITE PLAN

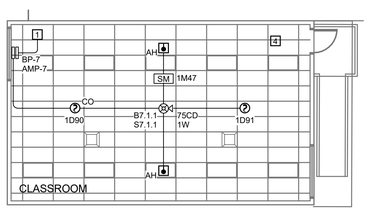
DRAWING NO. E1.00



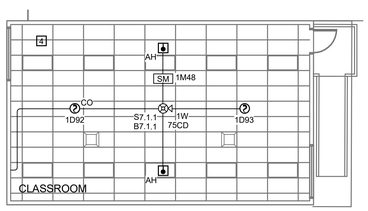
1 New Unit A Fire Alarm Plan
SCALE: 1/8" = 1'-0"



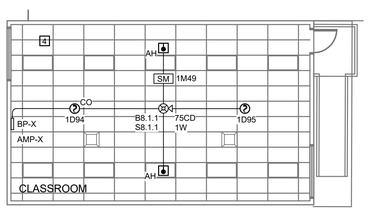
2 New Unit B Fire Alarm Plan
SCALE: 1/8" = 1'-0"



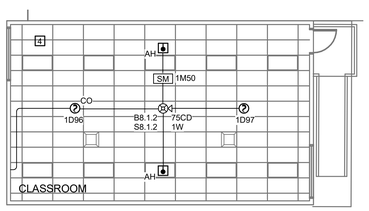
3 Portable 1 Fire Alarm Plan
SCALE: 1/8" = 1'-0"



4 Portable 2 Fire Alarm Plan
SCALE: 1/8" = 1'-0"



5 Portable 3 Fire Alarm Plan
SCALE: 1/8" = 1'-0"



6 Portable 4 Fire Alarm Plan
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

A. FIRE ALARM SYSTEM INSTALLATION SHALL COMPLY WITH ALL REQUIREMENTS OF APPLICABLE CODES, STANDARDS AND STATE REGULATIONS.

B. FIRE ALARM CIRCUITS AND CIRCUIT ROUTING ARE SHOWN SCHEMATICALLY FOR CLARITY ILLUSTRATING THE WIRING CONFIGURATION NECESSARY FOR PROPER CIRCUIT SUPERVISION.

C. COORDINATE CEILING MOUNTED FIRE ALARM DEVICE LOCATIONS WITH NEW LIGHT FIXTURES TO AVOID CONFLICTS.

D. DO NOT INSTALL FIRE ALARM DEVICES BACK TO BACK IN STUD WALLS.

E. INSTALL FIRE ALARM CONDUCTORS IN CONDUIT OR METAL SURFACE RACEWAY WHEN IN EXPOSED SPACES. MINIMUM SIZE OF CONDUIT SHALL BE 0.75". UTILIZE WIREMOLD 700 SERIES SURFACE RACEWAY (IN LIEU OF CONDUIT) FOR AREA WHERE CONDUIT CANNOT BE INSTALLED CONCEALED. CABLE ABOVE ACCESSIBLE CEILING CAN BE INSTALLED FREE AIR WHEN USING APPLICABLE CABLE. SUPPORT ALL FREE AIR CABLE EVERY 48" WITH J-HOOKS.

F. ALL SPEAKER, SPEAKER/STROBES SHALL HAVE MINIMUM 0.75" CONDUIT PATHWAYS. USE OF EXISTING 0.5" CONDUIT PATHWAY IS NOT ACCEPTABLE.

G. ENSURE THAT SPEAKER/STROBES ARE MOUNTED IN 5" SQ. X 2 7/8" DEEP BOX, FOR SURFACE MOUNTED DEVICES. FLUSH MOUNTED DEVICES SHALL BE MOUNTED IN THE MANUFACTURES DESIGNATED BACK BOXES, COLOR TO MATCH DEVICE.

H. REFER TO E3.00 FOR RISER DIAGRAMS.

I. CONTRACTOR SHALL PROVIDE 120V DEDICATED RED LOCKING CIRCUIT BREAKER PER FIRE ALARM SYSTEM PANELS PER LOCATION.

J. THE FIRE ALARM SYSTEM WILL BE DEMOLISHED AND REPLACED TO THE CURRENT 2016 CFC. THE SYSTEM WILL BE A FULLY AUTOMATIC SYSTEM WITH EMERGENCY VOICE ANNUNCIATION. FULL COVERAGE IN EACH BUILDING SHALL BE PROVIDED. COMMUNICATION WILL BE PROVIDED TO A CENTRAL MONITORING STATION.

NUMBERED SHEET NOTES

1. SEE SITE SHEET E1.0 AND RISER DIAGRAM SHEET E3.0 FOR CONDUIT PATHWAYS.
2. DUCT SMOKE DETECTOR TO ACITVATE HVAC SHUT DOWN.
3. HARD-LID CEILING WITH ABOVE CEILING SPACE. AH HEAT DETECTORS REQUIRED.
4. T-BAR CEILING WITH ABOVE CEILING SPACE. AH HEAT DETECTORS REQUIRED.

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STATE OF CALIFORNIA

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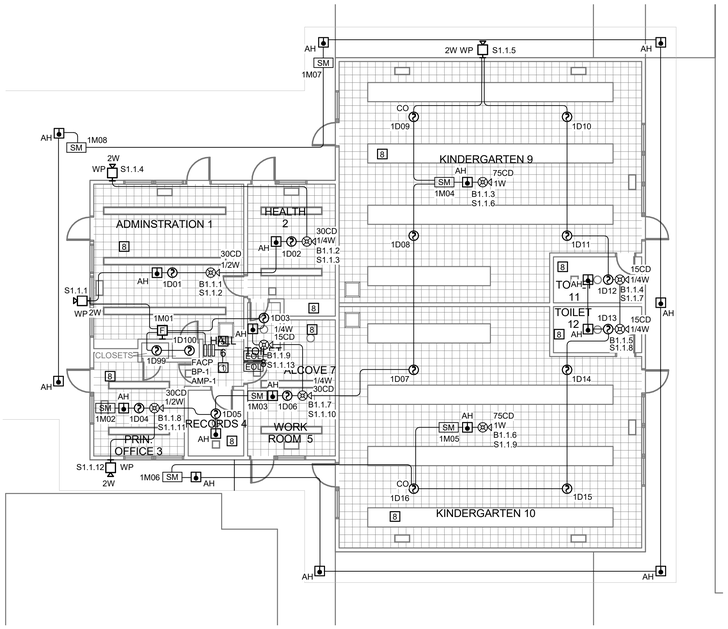
REVISIONS

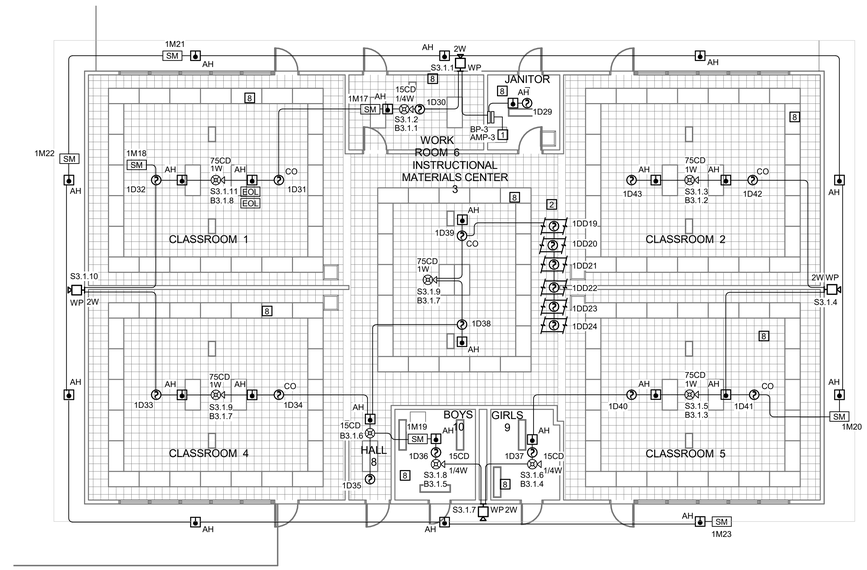
#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 1/8" = 1'-0"
DATE: 2019.12.20
TITLE: FIRE ALARM PLAN - NEW A, NEW B & PORTABLES 1-4
DRAWING NO. E2.00



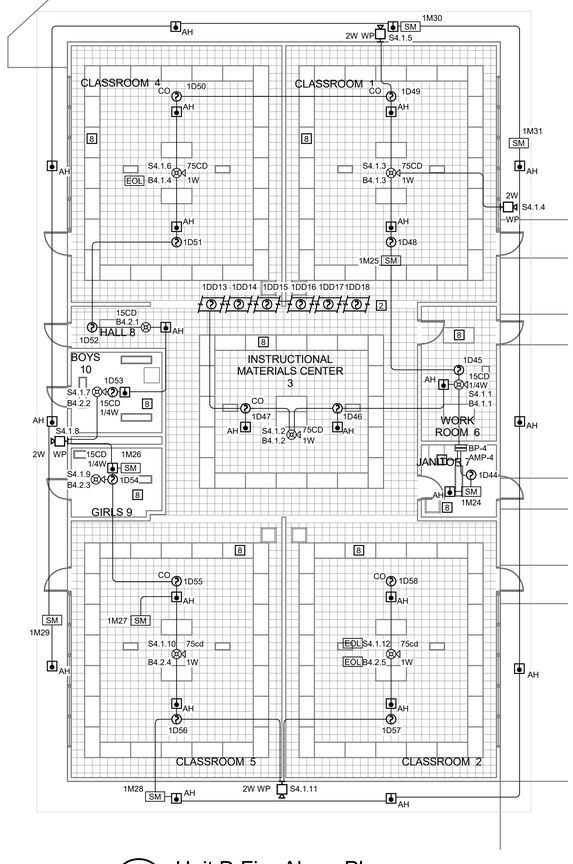
1 Unit ADMIN. Fire Alarm Plan

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



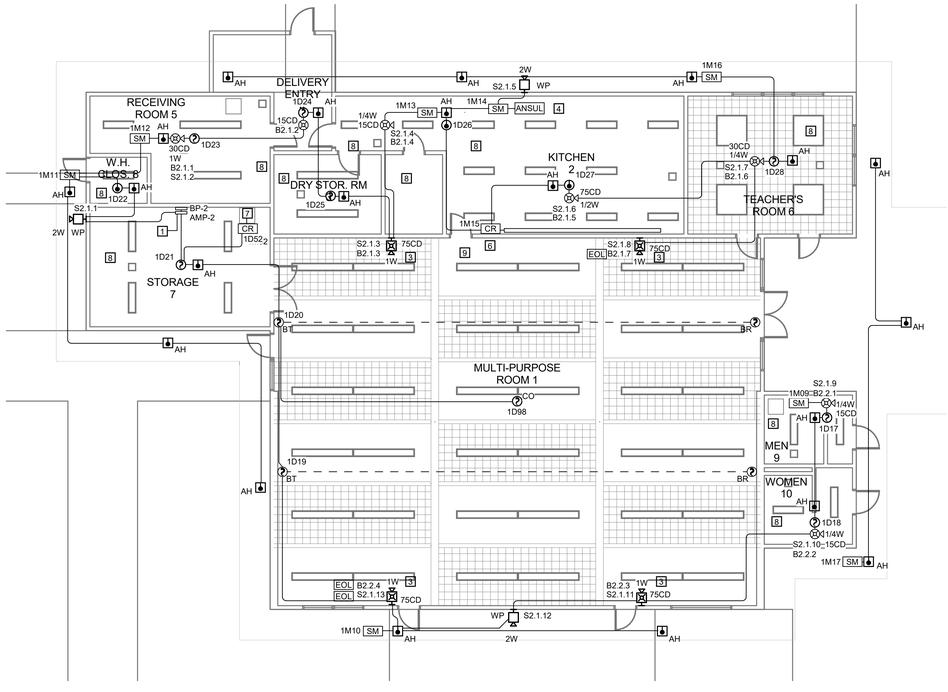
2 Unit E Fire Alarm Plan

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



3 Unit D Fire Alarm Plan

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



4 Unit F Fire Alarm Plan

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

GENERAL SHEET NOTES

A. FIRE ALARM SYSTEM INSTALLATION SHALL COMPLY WITH ALL REQUIREMENTS OF APPLICABLE CODES, STANDARDS AND STATE REGULATIONS.

B. FIRE ALARM CIRCUITS AND CIRCUIT ROUTING ARE SHOWN SCHEMATICALLY FOR CLARITY ILLUSTRATING THE WIRING CONFIGURATION NECESSARY FOR PROPER CIRCUIT SUPERVISION.

C. COORDINATE CEILING MOUNTED FIRE ALARM DEVICE LOCATIONS WITH NEW LIGHT FIXTURES TO AVOID CONFLICTS.

D. DO NOT INSTALL FIRE ALARM DEVICES BACK TO BACK IN STUD WALLS.

E. INSTALL FIRE ALARM CONDUCTORS IN CONDUIT OR METAL SURFACE RACEWAY WHEN IN EXPOSED SPACES. MINIMUM SIZE OF CONDUIT SHALL BE 0.75". UTILIZE WIREMOLD 700 SERIES SURFACE RACEWAY (IN LIEU OF CONDUIT) FOR AREA WHERE CONDUIT CANNOT BE INSTALLED CONCEALED. CABLE ABOVE ACCESSIBLE CEILING CAN BE INSTALLED FREE AIR WHEN USING APPLICABLE CABLE. SUPPORT ALL FREE AIR CABLE EVERY 48" WITH J-HOOKS.

F. ALL SPEAKER, SPEAKER/STROBES SHALL HAVE MINIMUM 0.75" CONDUIT PATHWAYS. USE OF EXISTING 0.5" CONDUIT PATHWAY IS NOT ACCEPTABLE.

G. ENSURE THAT SPEAKER/STROBES ARE MOUNTED IN 6" SQ. X 2 7/8" DEEP BOX, FOR SURFACE MOUNTED DEVICES. FLUSH MOUNTED DEVICES SHALL BE MOUNTED IN THE MANUFACTURES DESIGNATED BACK BOXES, COLOR TO MATCH DEVICE.

H. REFER TO E3.00 FOR RISER DIAGRAMS.

I. CONTRACTOR SHALL PROVIDE 120V DEDICATED RED LOCKING CIRCUIT BREAKER PER FIRE ALARM SYSTEM PANELS PER LOCATION.

J. THE FIRE ALARM SYSTEM WILL BE DEMOLISHED AND REPLACED TO THE CURRENT 2016 CFC. THE SYSTEM WILL BE A FULLY AUTOMATIC SYSTEM WITH EMERGENCY VOICE ANNUNCIATION. FULL COVERAGE IN EACH BUILDING SHALL BE PROVIDED. COMMUNICATION WILL BE PROVIDED TO A CENTRAL MONITORING STATION.

NUMBERED SHEET NOTES

1. SEE SITE SHEET E1.0 AND RISER DIAGRAM SHEET E3.0 FOR CONDUIT PATHWAYS.
2. DUCT SMOKE DETECTOR TO ACITVATE HVAC SHUT DOWN.
3. CONTRACTOR SHALL PROVIDE A PROTECTIVE CAGE/COVER.
4. (SM) MONITOR MODULE TO MONITOR ANSUL SYSTEM.
5. DACT WILL TRANSMIT SIGNALS TO OFF SITE MONITORING VIA PHONE LAND LINE WITH A CELLULAR BACK UP.
6. AREA DETECTORS TO INITIATE (CR) CONTROL RELAY TO ACTIVATE FIRE CURTAIN CLOSURE.
7. AREA SMOKE DETECTORS TO INITIATE (CR) CONTROL RELAY TO ACTIVATE A/V RACK SHUT OFF.
8. HARD LID CEILING WITH ATTIC SPACE ABOVE. AH HEAT DETECTORS REQUIRED.
9. EXPOSED CEILING WITH BEAMS. DIRECTLY BELOW ROOF DECK NO ATTIC SPACE. NO AH HEAT DETECTORS REQUIRED.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP. 02-118027 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 02/28/2020

IDENTIFICATION STAMP
DIV. OF THE S
APPL. # 02-1
REVIVEWED FOR
SS_____ FLS_____ ACS_____
DATE:_____

The Engineering Enterprise
CONSULTING ENGINEERS
1125 HIGH STREET
AUBURN, CA 95603
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Vinewood Elementary School
1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

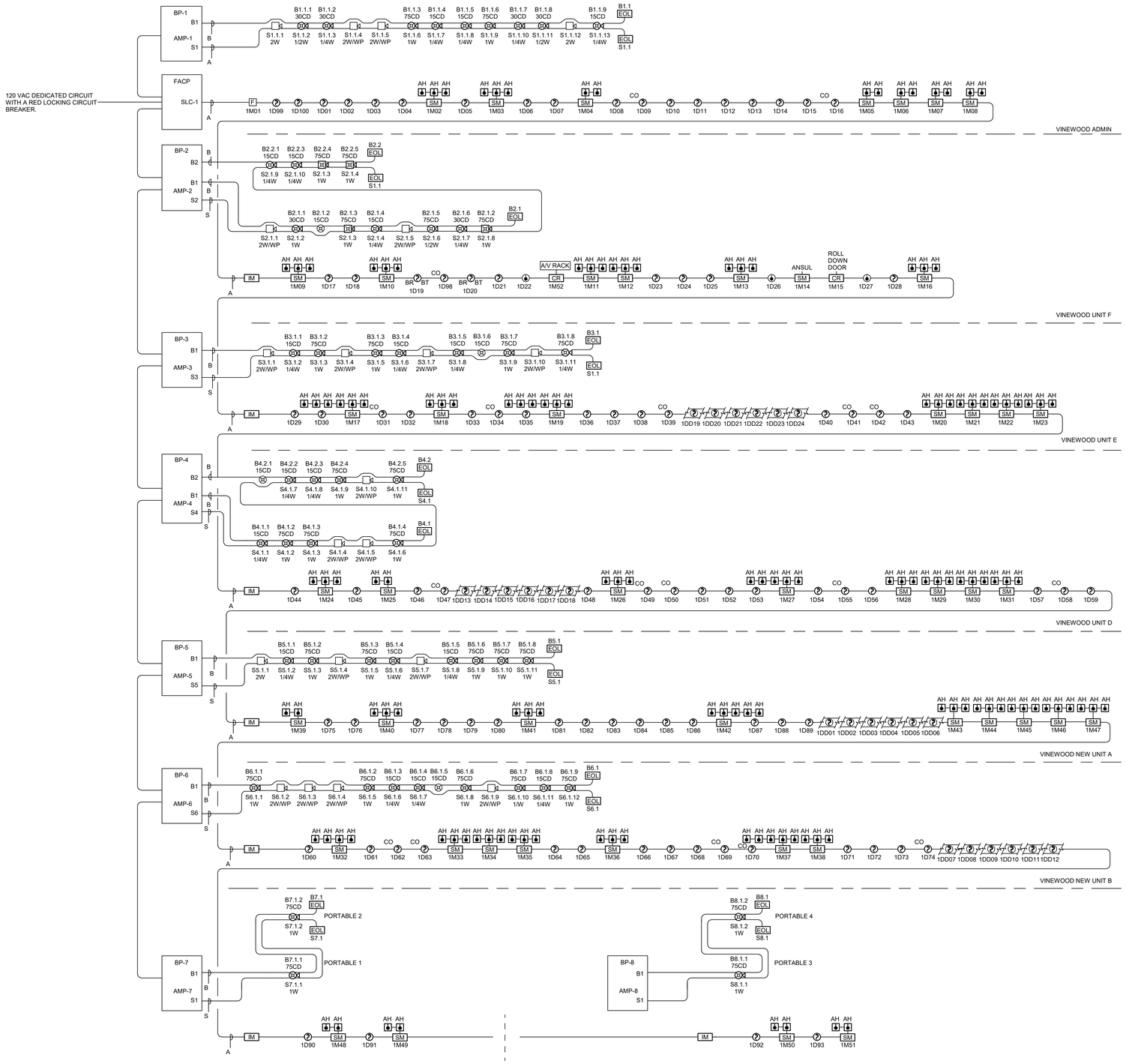
DESIGNER: Designer

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

DATE: 2019.12.20

TITLE:
FIRE ALARM PLAN - ADMIN, D, E, & F

DRAWING NO.
E2.01



1 FIRE ALARM RISER

SCALE:NTS

IDENTIFICATION STAMP
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1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer

SCALE: NTS

DATE: 2019.12.20

TITLE:
FIRE ALARM RISER

DRAWING NO.
E3.00

System Current Draw

E3 Series Control Panel with Broadband

	Total Standby	0.552 A	Total Alarm	7.711 A

	Standby Current				Alarm Current			
Device	Qty		Draw	Standby	Qty		Draw	Alarm
1. System Device								
Intel. Loop Interface. Main Board (IL1-MB-E3)	1	x	0.08100	0.08100	1	x	0.15000	0.15000
Intel. Loop Interface Supplement Board (IL1-SI-E3)	0	x	0.08100		0	x	0.15000	
Intel. Loop Interface Main Board - Apollo (IL95-MB-E3)	0	x	0.05000		0	x	0.09100	
Intel. Loop Interface Supplement Board - Apollo (IL95-SI-E3)	0	x	0.05000		0	x	0.09100	
7100 Panel, 1 SLC	1	x	0.05600	0.05600	1	x	0.07600	0.07600
7100 Panel, 1 SLC with DACT	0	x	0.07500		0	x	0.09900	
7100 Panel, 2 SLC	0	x	0.08500		0	x	0.08500	
7100 Panel, 2 SLC with DACT	0	x	0.09500		0	x	0.10500	
2. E3 Optional Modules								
120V Power Supply Sub-Assembly (PM-9)	0	x	0.05000		0	x	0.05000	
240V Power Supply Sub-Assembly (PM-9G)	0	x	0.02700		0	x	0.05000	
LCD Display & Switch Control (LCD-E3)	0	x	0.02400		0	x	0.02800	
ARCNET Repeater (RPT-E3)	0	x	0.01300		0	x	0.01300	
Digital Communicator (DACT-E3)	1	x	0.01800	0.01800	1	x	0.01800	0.01800
Optional Remote Serial Annunciator (LCD-7100)	0	x	0.05000		0	x	0.07500	
Network LCD Annunciator (NCA)	0	x	0.20000		0	x	0.20000	
Auxiliary Switch Sub-Assembly (ASM-16)	0	x	0.01100		0	x	0.01100	
Remote LED Driver Module (ANU-48)	0	x	0.01100		0	x	0.01100	
Addressable Node Expander (ANX)	0	x	0.06500		0	x	0.06500	
3. 7100 Optional Modules								
Intelligent Network Interface Module (INI-7100)	0	x	0.04000		0	x	0.04000	
Printer Transient Module (PTRM)	0	x	0.02000		0	x	0.02000	
Remote LED Driver Module (LDM-7100)	0	x	0.03500		0	x	0.20000	
Class A Option Module (CAOM)	0	x	0.00150		0	x	0.00150	
Municipal Circuit Option Module (MCOM)	0	x	0.00150		0	x	0.00150	
4. INI-VGC Command Center								
Intel. Network Command Center (INI-VGC)	0	x	0.15000		0	x	0.15000	
Addressable Switch Sub-assembly (ASM-16)	0	x	0.01100		0	x	0.01100	
Voice Paging Microphone (Microphone)	0	x	0.00100		0	x	0.00100	
Firefighter's Telephone (Handset)	0	x	0.02000		0	x	0.02000	
Addressable Output Module-Telephone (AOM-TEL)	0	x	0.00200		0	x	0.00650	
5. INI-VGX Voice Gateway								
Intel. Network Voice Gateway (INI-VGX	0	x	0.15000		0	x	0.15000	
120V Power Supply Sub-Assembly (PM-9)	0	x	0.05000		0	x	0.05000	
240V Power Supply Sub-Assembly (PM-9G)	0	x	0.02700		0	x	0.05000	
Amplifier Sub-assembly, 50 watt 25V (AM-50)	3	x	0.09500	0.25800	3	x	2.20600	6.61800
Amplifier Sub-assembly, 50 watt 70V (AM-50-70)	0	x	0.04900		0	x	2.20600	
Addressable Output Module-Signal (AOM-2SF)	0	x	0.00200		0	x	0.00650	
Addressable Output Module-Telephone (AOM-TEL)	0	x	0.00200		0	x	0.00650	
Addressable Output Module-Audio (AOM-MUX)	0	x	0.00200		0	x	0.00650	
6. INI-VGE Command Center Voice Gateway								
Intel. Network Command Voice Gateway (INI-VGE)	0	x	0.15000		0	x	0.15000	
Addressable Switch Sub-assembly (ASM-16)	0	x	0.01100		0	x	0.01100	
Voice Paging Microphone (Microphone)	1	x	0.00100	0.00100	1	x	0.00100	0.00100
Firefighter's Telephone (Handset)	0	x	0.02000		0	x	0.02000	
Addressable Output Module-Signal (AOM-2SF)	0	x	0.00200		0	x	0.00650	
Addressable Output Module-Telephone (AOM-TEL)	0	x	0.00200		0	x	0.00650	
Addressable Output Module-Audio (AOM-MUX)	0	x	0.00200		0	x	0.00650	
7. Smoke Detectors/Modules								
ATD-IJF INLAT DETECTOR	0	x	0.00030		0	x	0.00650	
PHOTO SMOKE DETECTOR	57	x	0.00200	0.11400	57	x	0.00650	0.48450
XP95 DUCT DETECTOR	0	x	0.00400		0	x	0.20000	
MCS-COP COSMOKE DETECTOR	17	x	0.00030	0.00510	17	x	0.00650	0.11050
AAM20F DUAL MONITOR MODULE	0	x	0.00750		0	x	0.00650	
AAM-4F MONITOR MODULE	50	x	0.00038	0.01875	50	x	0.00500	0.25000
M500X ISOLATION MODULE	0	x	0.00500		0	x	0.00650	
AGM-2RF RELAY MODULE	0	x	0.00038		0	x	0.00650	
M57 PULL STATION	1	x	0.00030	0.00030	1	x	0.00300	0.00300
ADDRESSABLE HEAT DETECTOR	0	x	0.00030		0	x	0.00650	
8. Notification Appliances								
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
	0	x	0.00000		0	x	0.00000	
			Total Standby Load:	0.552 A			Total Alarm Load:	7.711 A

VINEWOOD AMPLIFIER 1

Device Type	QTY	Standby Current (amps) Watts		Current Draw		Total	Alarm Current (amps) Qty		Current Draw		Total
1. System											
AM-50	1	50	X	0.0860	=	0.0860	0	X	2.2060	=	2.2060
			X		=		0	X		=	0.0000
			X		=		0	X		=	0.0000
2. Speakers											
Total Speaker Watts @ 25Vrms		12.25							0.4900	=	0.4900
Total Speaker Watts @ 70.7Vrms									0.0000	=	0.0000
						Total Standby Load	0.0860				Total Alarm Load 2.6960

0

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.6960 Amps	X	15	= 0.674 AH
			Total Current Load	2.74 AH
		*Multiply by the Derating Factor		= x 1.20
			Total Ampere Hours Required	3.29 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

VINEWOOD AMPLIFIER 2

Device Type	QTY	Standby Current (amps) Watts		Current Draw		Total	Alarm Current (amps) Qty		Current Draw		Total
1. System											
AM-50	1	50	X	0.0860	=	0.0860	0	X	2.2060	=	2.2060
			X		=		0	X		=	0.0000
			X		=		0	X		=	0.0000
2. Speakers											
Total Speaker Watts @ 25Vrms		10.5							0.4200	=	0.4200
Total Speaker Watts @ 70.7Vrms									0.0000	=	0.0000
						Total Standby Load	0.0860				Total Alarm Load 2.6260

0

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.6260 Amps	X	15	= 0.657 AH
			Total Current Load	2.72 AH
		*Multiply by the Derating Factor		= x 1.20
			Total Ampere Hours Required	3.26 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

VINEWOOD AMPLIFIER 3

Device Type	QTY	Standby Current (amps) Watts		Current Draw		Total	Alarm Current (amps) Qty		Current Draw		Total
1. System											
AM-50	1	50	X	0.0860	=	0.0860	0	X	2.2060	=	2.2060
			X		=		0	X		=	0.0000
			X		=		0	X		=	0.0000
2. Speakers											
Total Speaker Watts @ 25Vrms		12							0.4800	=	0.4800
Total Speaker Watts @ 70.7Vrms									0.0000	=	0.0000
						Total Standby Load	0.0860				Total Alarm Load 2.6860

0

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.6860 Amps	X	15	= 0.672 AH
			Total Current Load	2.74 AH
		*Multiply by the Derating Factor		= x 1.20
			Total Ampere Hours Required	3.28 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

VINEWOOD AMPLIFIER 4

Device Type	QTY	Standby Current (amps) Watts		Current Draw		Total	Alarm Current (amps) Qty		Current Draw		Total
1. System											
AM-50	1	50	X	0.0860	=	0.0860	0	X	2.2060	=	2.2060
			X		=		0	X		=	0.0000
			X		=		0	X		=	0.0000
2. Speakers											
Total Speaker Watts @ 25Vrms		11.75							0.4700	=	0.4700
Total Speaker Watts @ 70.7Vrms									0.0000	=	0.0000
						Total Standby Load	0.0860				Total Alarm Load 2.6760

0

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.6760 Amps	X	15	= 0.669 AH
			Total Current Load	2.73 AH
		*Multiply by the Derating Factor		= x 1.20
			Total Ampere Hours Required	3.28 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

VINEWOOD AMPLIFIER 5

Device Type	QTY	Standby Current (amps) Watts		Current Draw		Total	Alarm Current (amps) Qty		Current Draw		Total
1. System											
AM-50	1	50	X	0.0860	=	0.0860	0	X	2.2060	=	2.2060
			X		=		0	X		=	0.0000
			X		=		0	X		=	0.0000
2. Speakers											
Total Speaker Watts @ 25Vrms		13.75							0.5500	=	0.5500
Total Speaker Watts @ 70.7Vrms									0.0000	=	0.0000
						Total Standby Load	0.0860				Total Alarm Load 2.7560

0

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.7560 Amps	X	15	= 0.689 AH
			Total Current Load	2.75 AH
		*Multiply by the Derating Factor		= x 1.20
			Total Ampere Hours Required	3.30 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

VINEWOOD AMPLIFIER 6

Device Type	QTY	Standby Current (amps) Watts		Current Draw		Total	Alarm Current (amps) Qty		Current Draw		Total
1. System											
AM-50	1	50	X	0.0860	=	0.0860	0	X	2.2060	=	2.2060
			X		=		0	X		=	0.0000
			X		=		0	X		=	0.0000
2. Speakers											
Total Speaker Watts @ 25Vrms		13.75							0.5500	=	0.5500
Total Speaker Watts @ 70.7Vrms									0.0000	=	0.0000
						Total Standby Load	0.0860				Total Alarm Load 2.7560

0

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.7560 Amps	X	15	= 0.689 AH
			Total Current Load	2.75 AH
		*Multiply by the Derating Factor		= x 1.20
			Total Ampere Hours Required	3.30 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

VINEWOOD AMPLIFIER 7

Device Type	QTY	Standby Current (amps) Watts		Current Draw		Total	Alarm Current (amps) Qty		Current Draw		Total
1. System											
AM-50	1	50	X	0.0860	=	0.0860	0	X	2.2060	=	2.2060
			X		=		0	X		=	0.0000
			X		=		0	X		=	0.0000
2. Speakers											
Total Speaker Watts @ 25Vrms		4							0.1600	=	0.1600
Total Speaker Watts @ 70.7Vrms									0.0000	=	0.0000
						Total Standby Load	0.0860				Total Alarm Load 2.3660

0

		Required Standby Time in Hours		
Standby Load Current (Amps)	0.0860 Amps	X	24	= 2.064 AH
		Required Alarm Time in Hours		
Alarm Load Current (Amps)	2.3660 Amps	X	15	= 0.592 AH
			Total Current Load	2.66 AH
		*Multiply by the Derating Factor		= x 1.20
			Total Ampere Hours Required	3.19 AH
			Recommended Batteries:	7AH BATTERIES

*Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-1
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4
AWG: 12
POWER: DC
AMPS: 3

CLASS: CLASS B
TOTAL DEVICES: 9
19.9 % (0.597) AMPS USED
1.74 % (0.354) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT (	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.340	20.305	20.248	20.159
2	SPSCWL	15				0.041	25	20.284	20.216	20.107	19.934
3	SPSCWL	15				0.041	25	20.232	20.134	19.976	19.726
4	SPSCWL	30				0.063	25	20.184	20.058	19.856	19.535
5	SPSCWL	30				0.063	25	20.143	19.992	19.752	19.369
6	SPSCWL	30				0.063	25	20.108	19.936	19.664	19.228
7	SPSCWL	30				0.063	25	20.079	19.891	19.592	19.113
8	SPSCWL	75				0.111	25	20.057	19.856	19.536	19.023
9	SPSCWL	75				0.111	25	20.046	19.838	19.508	18.978
							VOLTAGE D	0.354	0.562	0.892	1.422

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-2
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4
AWG: 12
POWER: DC
AMPS: 3

CLASS: CLASS B
TOTAL DEVICES: 7
18.03 % (0.541) AMPS USED
1.13 % (0.231) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT (	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.346	20.314	20.263	20.181
2	SPSCWL	30				0.063	25	20.296	20.234	20.136	19.979
3	SPSCWL	30				0.063	25	20.252	20.164	20.025	19.802
4	SPSCWL	75				0.111	25	20.214	20.104	19.930	19.651
5	SPSCWL	75				0.111	25	20.188	20.062	19.863	19.545
6	SPSCWL	75				0.111	25	20.173	20.038	19.824	19.484
7	SCWL	15				0.041	25	20.169	20.031	19.814	19.467
							VOLTAGE D	0.231	0.369	0.586	0.933

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 2
POWER SOURCE: BPS-2
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4
AWG: 12
POWER: DC
AMPS: 3

CLASS: CLASS B
TOTAL DEVICES: 4
10.13 % (0.304) AMPS USED
.44 % (0.090) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT (	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.369	20.352	20.323	20.277
2	SPSCWL	15				0.041	25	20.343	20.310	20.256	20.171
3	SPSCWL	75				0.111	25	20.321	20.275	20.200	20.081
4	SPSCWL	75				0.111	25	20.310	20.257	20.172	20.036
							VOLTAGE D	0.090	0.143	0.228	0.364

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-3
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4
AWG: 12
POWER: DC
AMPS: 3

CLASS: CLASS B
TOTAL DEVICES: 8
21.1 % (0.633) AMPS USED
1.58 % (0.323) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT (	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.336	20.299	20.239	20.144
2	SPSCWL	15				0.041	25	20.277	20.205	20.089	19.905
3	SPSCWL	15				0.041	25	20.222	20.117	19.949	19.682
4	SPSCWL	75				0.111	25	20.171	20.036	19.819	19.476
5	SPSCWL	75				0.111	25	20.131	19.972	19.718	19.315
6	SPSCWL	75				0.111	25	20.102	19.926	19.645	19.199
7	SPSCWL	75				0.111	25	20.084	19.898	19.600	19.127
8	SCW	15				0.066	25	20.077	19.887	19.583	19.100
							VOLTAGE D	0.323	0.513	0.817	1.300

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-5
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4
AWG: 12
POWER: DC
AMPS: 3

CLASS: CLASS B
TOTAL DEVICES: 8
20.27 % (0.608) AMPS USED
1.49 % (0.303) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT (	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.339	20.303	20.246	20.154
2	SPSCWL	15				0.041	25	20.282	20.213	20.102	19.925
3	SPSCWL	15				0.041	25	20.229	20.129	19.968	19.712
4	SPSCWL	75				0.111	25	20.180	20.052	19.845	19.516
5	SPSCWL	75				0.111	25	20.142	19.992	19.750	19.365
6	SPSCWL	75				0.111	25	20.116	19.950	19.683	19.259
7	SPSCWL	75				0.111	25	20.101	19.926	19.644	19.198
8	SPSCWL	15				0.041	25	20.097	19.919	19.634	19.181
							VOLTAGE D	0.303	0.481	0.766	1.219

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 1
POWER SOURCE: BPS-4
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4
AWG: 12
POWER: DC
AMPS: 3

CLASS: CLASS B
TOTAL DEVICES: 4
12.47 % (0.374) AMPS USED
.51 % (0.104) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT (	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.362	20.340	20.305	20.249
2	SPSCWL	75				0.111	25	20.329	20.287	20.220	20.114
3	SPSCWL	75				0.111	25	20.307	20.252	20.164	20.024
4	SPSCWL	75				0.111	25	20.296	20.234	20.136	19.979
							VOLTAGE D	0.104	0.166	0.264	0.421

Voltage Drop Calculations

CIRCUIT NAME: NAC Circuit 2
POWER SOURCE: BPS-4
MODEL NUMBER: HPF24S8
BRAND: HPP
VOLTS: 20.4
AWG: 12
POWER: DC
AMPS: 3

CLASS: CLASS B
TOTAL DEVICES: 5
12.33 % (0.370) AMPS USED
.61 % (0.124) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT (	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	15				0.041	25	20.363	20.341	20.306	20.251
2	SPSCWL	15				0.041	25	20.330	20.289	20.222	20.118
3	SPSCWL	75				0.111	25	20.301	20.243	20.149	20.002
4	SPSCWL	75				0.111	25	20.283	20.215	20.104	19.930
5	SCW	15				0.066	25	20.276	20.204	20.087	19.903
							VOLTAGE D	0.124	0.196	0.313	0.497

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DATE: 02/28/2020

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DATE:_____

The Engineering Enterprise
CONSULTING ENGINEERS
1125 HIGH STREET
AUBURN, CA 95603
(530) 886-8556

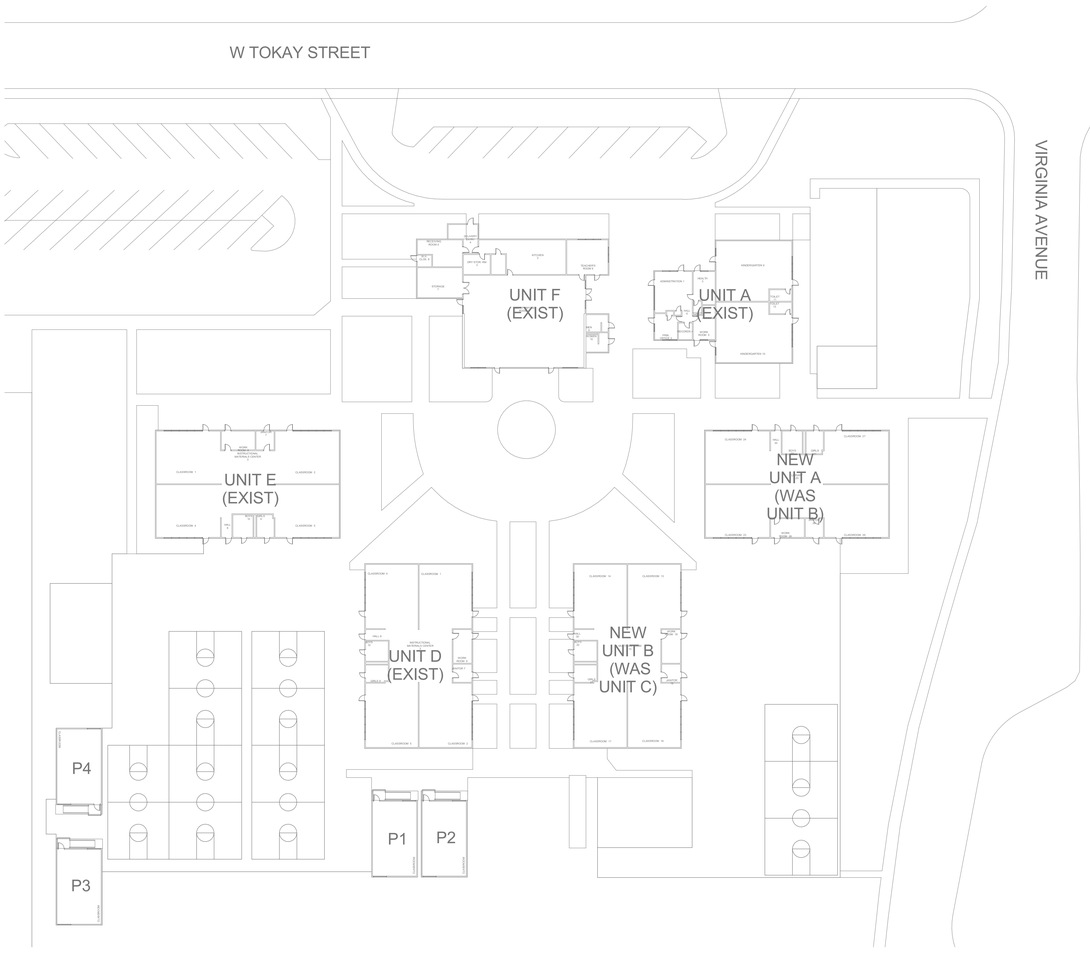
REGISTERED PROFESSIONAL ENGINEER
SCOTT WHEELER
No. E015491
Exp. 06/30/21
ELECTRICAL
STATE OF CALIFORNIA

Vinewood Elementary School
1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE:
DATE: 2019.12.20
TITLE: FIRE ALARM CALCULATIONS
DRAWING NO. E4.01



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No. E015497
Exp. 06/30/21
STATE OF CALIFORNIA

Vinewood Elementary School
1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer

SCALE: 1/32" = 1'-0"

DATE: 2019.12.20

TITLE:
FIRE ALARM DEMO PLAN - SITE PLAN

DRAWING NO.
ED1.00

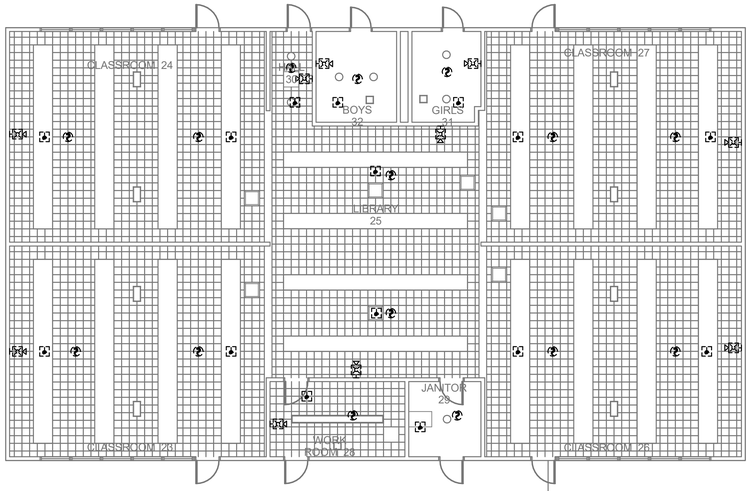
GENERAL SHEET NOTES

A. TO REMOVE ALL UNUSED DEVICES, CIRCUITRY AND CONDUIT BACK TO SOURCE.

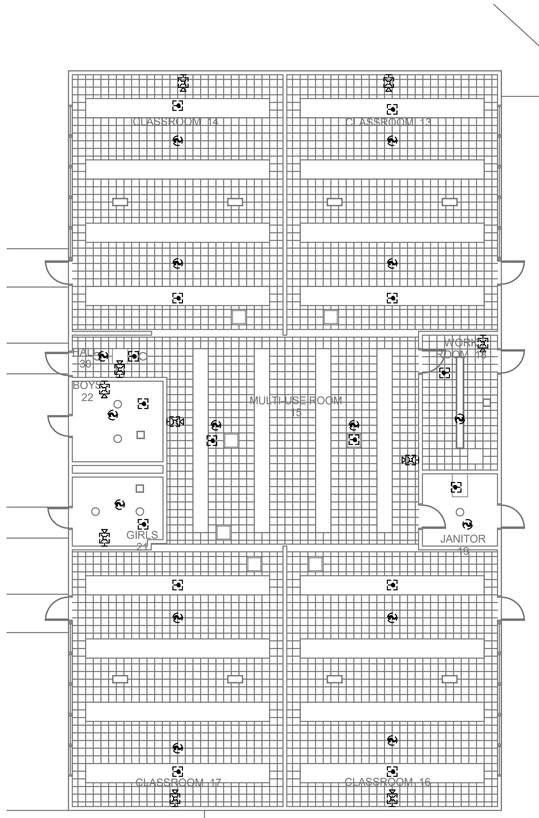
B. WHEN A DEVICE IS REMOVED FROM AN EXISTING WALL WHICH WILL REMAIN, PATCH WALL TO MATCH EXISTING OR NEW FINISH.

C. WHERE EXISTING FIRE ALARM DEVICES ARE TO BE REMOVED, THE CONTRACTOR SHALL ALSO REMOVE ALL CONDUCTORS SERVING THE DEVICE. ABANDONED CONDUITS AND BOXES CAN BE RE-USED TO PULL NEW CONDUCTORS THROUGH FOR SERVICE DEVICES DOWN STREAM. DO NOT SPLICE IN ABANDONED DEVICE BOXES.

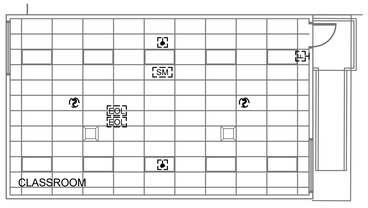
D. REMOVE ALL UNUSED FIRE ALARM CONTROL PANELS, BOOSTER PANELS AND REMOTE ANNUNCIATORS.



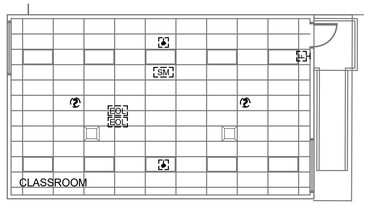
1 New Unit A Fire Alarm Demolition Plan
SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



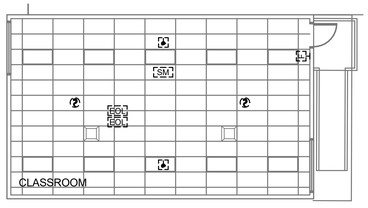
2 New Unit B Fire Alarm Demolition Plan
SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



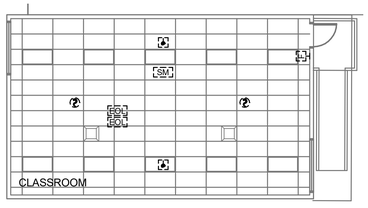
3 Portable 1 Fire Alarm Demolition Plan
SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



4 Portable 2 Fire Alarm Demolition Plan
SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



5 Portable 3 Fire Alarm Demolition Plan
SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



6 Portable 4 Fire Alarm Demolition Plan
SCALE: 1/8" = 1'-0" 2' 4' 8' 16'

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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

Vinewood Elementary School
1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 1/8" = 1'-0"
DATE: 2019.12.20
TITLE: FIRE ALARM DEMO PLAN - NEW A, NEW B & PORTABLES 1-4
DRAWING NO. ED1.01

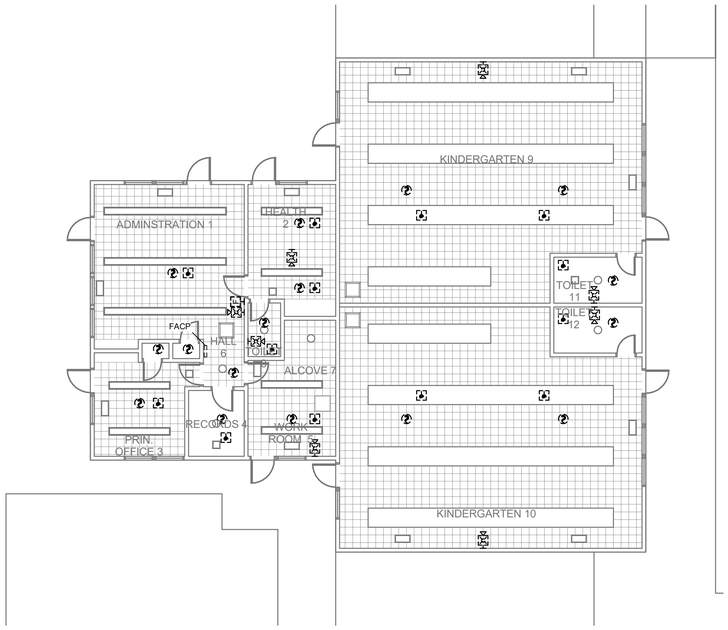
GENERAL SHEET NOTES

A. TO REMOVE ALL UNUSED DEVICES, CIRCUITRY AND CONDUIT BACK TO SOURCE.

B. WHEN A DEVICE IS REMOVED FROM AN EXISTING WALL WHICH WILL REMAIN, PATCH WALL TO MATCH EXISTING OR NEW FINISH.

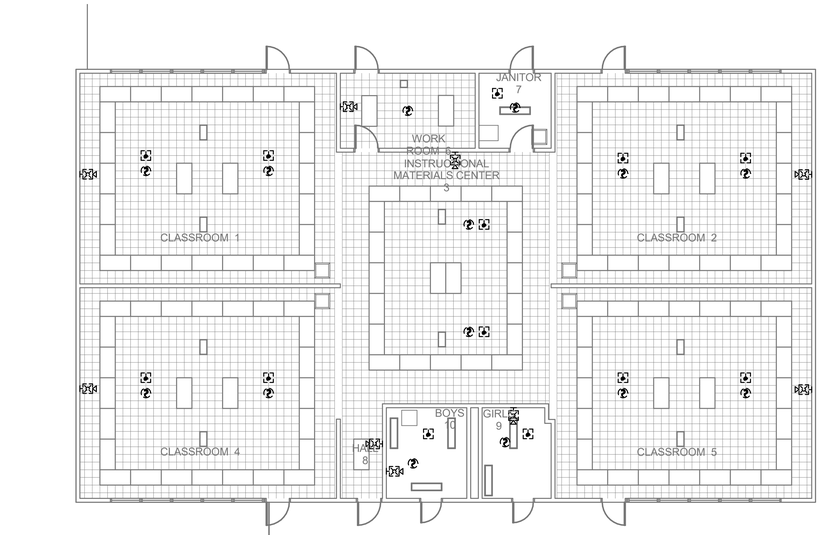
C. WHERE EXISTING FIRE ALARM DEVICES ARE TO BE REMOVED, THE CONTRACTOR SHALL ALSO REMOVE ALL CONDUCTORS SERVING THE DEVICE. ABANDONED CONDUITS AND BOXES CAN BE RE-USED TO PULL NEW CONDUCTORS THROUGH FOR SERVICE DEVICES DOWN STREAM. DO NOT SPLICE IN ABANDONED DEVICE BOXES.

D. REMOVE ALL UNUSED FIRE ALARM CONTROL PANELS, BOOSTER PANELS AND REMOTE ANNUNCIATORS.



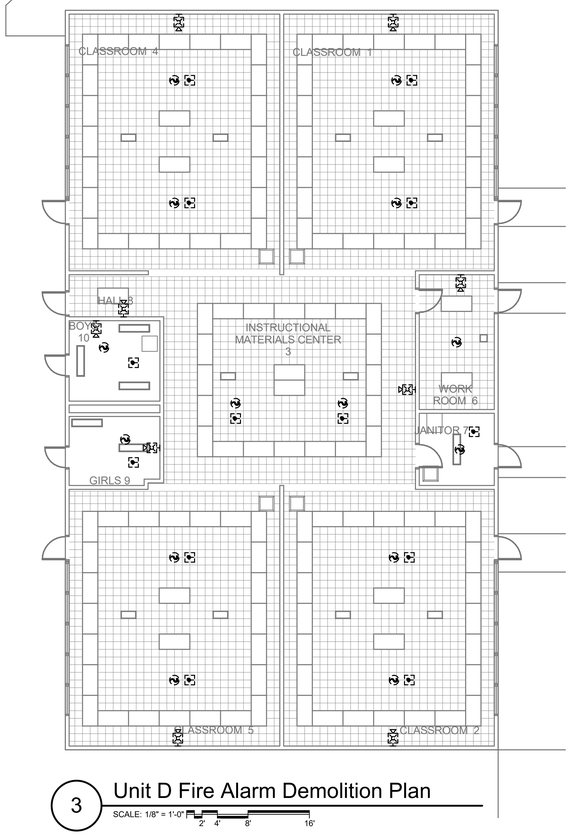
1 Unit A Fire Alarm Demolition Plan

SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



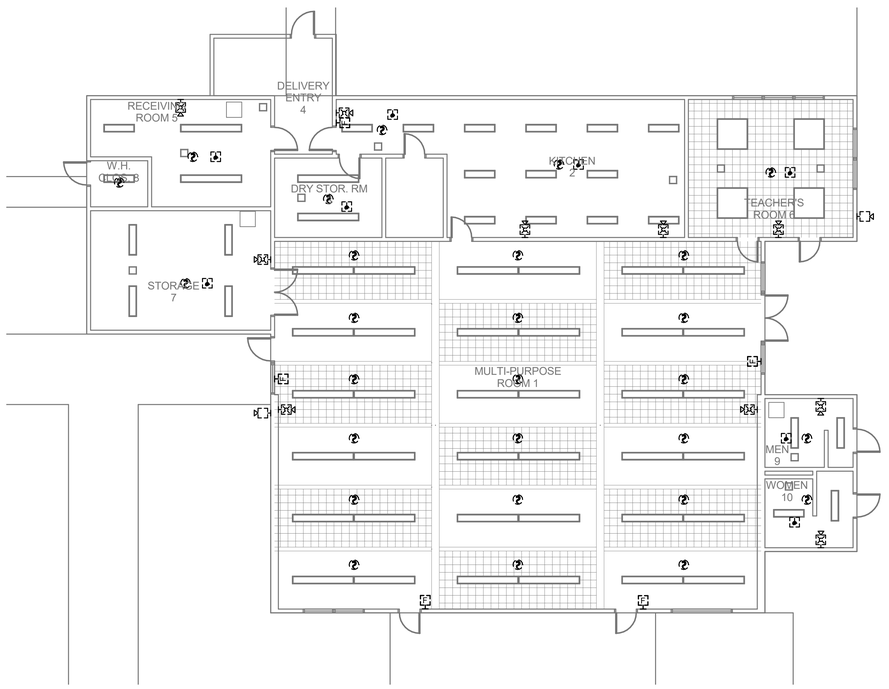
2 Unit E Fire Alarm Demolition Plan

SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



3 Unit D Fire Alarm Demolition Plan

SCALE: 1/8" = 1'-0" 2' 4' 8' 16'



4 Unit F Fire Alarm Demolition Plan

SCALE: 1/8" = 1'-0" 2' 4' 8' 16'

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1600 W Tokay St, Lodi, CA 95242

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer
SCALE: 1/8" = 1'-0"
DATE: 2019.12.20
TITLE: FIRE ALARM DEMO PLAN - A, D, E, & F
DRAWING NO. ED1.02