

# BECKMAN ELEMENTARY SCHOOL

2201 SCARBOROUGH DR., LODI CA , 95240

## FIRE ALARM REPLACEMENT PROJECT

IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
APP: 02-118691 INC:  
REVIEWED FOR  
DIV. ☐ SS ☐ FLS ☒ ACS ☐  
DATE: 03/01/2021  
REVIEWED FOR  
FLS. ACS.

**The Engineering Enterprise**  
CONSULTING ENGINEERS  
1305 MARINA VILLAGE PARKWAY  
ALAMEDA, CA 94501  
(510) 886-8556



**BECKMAN ELEMENTARY SCHOOL  
FIRE ALARM MODERNIZATION  
2201 SCARBOROUGH DR, LODI, CA  
95240**

REVISIONS	
#	DESCRIPTION
	DATE

DESIGNER:  
  
SCALE:  
  
DATE:2020.08.19  
  
TITLE:  
**COVER SHEET**

DRAWING NO.  
**G0.0**

CODE INFORMATION	FIRE ALARM SCOPE OF WORK	PROJECT TEAM	ELECTRICAL SHEET INDEX																																																																																																												
<p>THE INTENT OF THE CONSTRUCTION DOCUMENTS IS REPLACE EQUIPMENT IN ACCORDANCE WITH THE CBC 2019. SHOULD ANY CONDITION DEVELOP NOT COVERED BY THE CONSTRUCTION DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH THE CBC 2019, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.</p> <p>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 2019 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.</p> <p>ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:</p> <p>2019 CALIFORNIA ADMINISTRATIVE CODE (CAC) PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)</p> <p>2019 CALIFORNIA BUILDING CODE (CBC) PART 2, TITLE 24, CCR BASED ON THE 2018 INTERNATIONAL BUILDING CODE (IBC)</p> <p>2019 CALIFORNIA ELECTRICAL CODE (CEC) PART 3, TITLE 24, CCR BASED ON THE 2017 NATIONAL ELECTRICAL CODE (NEC)</p> <p>2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24, CCR BASED ON THE 2018 UNIFORM MECHANICAL CODE (UMC)</p> <p>2019 CALIFORNIA PLUMBING CODE (CPC) PART 5, TITLE 24, CCR BASED ON THE 2018 UNIFORM PLUMBING CODE (UPC)</p> <p>2019 CALIFORNIA FIRE CODE (CFC) PART 9, TITLE 24, CCR BASED ON THE 2018 INTERNATIONAL FIRE CODE (IFC)</p> <p>2016 NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE</p> <p>COMPLIANCE WITH 2019 CALIFORNIA FIRE CODE, CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.</p>	<p>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.</p> <p><b>FIRE ALARM DESCRIPTION</b></p> <p>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.</p> <p>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.</p> <p>CABLE ABOVE CEILING WHEN NOT IN EXISTING CONDUIT WILL BE FREE AIR AND SUPPORTED EVERY 48" WITH J-HOOKS, PAINTED RED.</p> <p>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.</p> <p>DEMOLISH ALL OLD CABLE, FIRE ALARM COMPONENTS AND BACK BOXES FROM SITE.</p> <p>ALL CABLE AND COMPONENTS WILL BE NEW.</p> <p>THIS PROJECT IS TO REPLACE EXISTING FIRE ALARM HEAD END UNIT AND ALL ASSOCIATED DEVICES.</p> <p>FIRE ALARM SYSTEM: CLASS B IDC: CLASS B SLC CIRCUIT: CLASS B NOTIFICATION CIRCUIT: CLASS B</p>	<p><u>OWNER</u></p> <p>LODI UNIFIED SCHOOL DISTRICT 1305 E. VINE ST. LODI, CA 95240</p> <p>CONTACT: LEONARD KAHN (209)331-7225 E-MAIL CONTACT: VBRUM@LODIUSD.NET</p> <p><u>ELECTRICAL ENGINEER:</u></p> <p>THE ENGINEERING ENTERPRISE 1125 HIGH ST. AUBURN, CA 95603</p> <p>CONTACT: SCOTT WHEELER: 530-305-927-5784 FAX: 530-886-8557 EMAIL: SCOTT@ENGENT.COM</p> <p>CONTACT: JESSE WHEELER: 530-927-5630 FAX: 530-886-8557 EMAIL: JESSE.WHEELER@ENGENT.COM</p>	<table><tr><td>2020.01.01</td><td>SCHEMATIC DESIGN</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>2020.02.01</td><td>DESIGN DEVELOPMENT</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>2020.03.01</td><td>CONSTRUCTION DOCUMENTS</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>2020.04.01</td><td>SUBMITTAL 04</td><td> </td><td> </td><td> </td><td> </td></tr></table> <table><tr><th>SHEET NO.</th><th>SHEET NAME</th><th> </th><th> </th><th> </th><th> </th></tr><tr><td>G0.0</td><td>COVER SHEET</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA0.00</td><td>SYMBOLS, NOTES, ABBREVIATIONS, AND SHEET INDEX</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA0.01</td><td>FA SCHEDULES, NOTES &amp; MATRIX</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA1.00</td><td>SITE PLAN</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA2.00</td><td>FIRE ALARM PLAN - UNIT A, B &amp; C</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA2.01</td><td>FIRE ALARM PLAN - UNIT D, E, F, G, H, I &amp; J</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA2.02</td><td>FIRE ALARM PLAN - UNITS F26-F30</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA3.00</td><td>FIRE ALARM CALCS</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA3.01</td><td>FIRE ALARM CALCS</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>FA3.02</td><td>FIRE ALARM RISER</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>DFA1.00</td><td>FIRE ALARM DEMO PLAN - UNIT A, B &amp; C</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>DFA1.01</td><td>FIRE ALARM DEMO PLAN - UNIT D, E, F, G, H, I &amp; J</td><td> </td><td> </td><td> </td><td> </td></tr><tr><td>DFA1.02</td><td>FIRE ALARM DEMO PLAN - UNIT F26-F30</td><td> </td><td> </td><td> </td><td> </td></tr></table>	2020.01.01	SCHEMATIC DESIGN					2020.02.01	DESIGN DEVELOPMENT					2020.03.01	CONSTRUCTION DOCUMENTS					2020.04.01	SUBMITTAL 04					SHEET NO.	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	N/A	<ol style="list-style-type: none"><li>THE FIRE ALARM SYSTEM SHALL CONFORM TO 2019 CALIFORNIA ELECTRICAL CODE (CEC) ARTICLE 760 AND 2019 CALIFORNIA FIRE CODE (CFC) SECTION 907.</li><li>PROVIDE CALIFORNIA STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM INCLUDING MANUFACTURER CUT SHEETS FOR REVIEW.</li><li>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.</li><li>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.</li><li>PROVIDE A RECORD OF COMPLETION PER CBC 907.7.2.</li><li>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 UJFX OR UUIS BY UL OR SHALL MEET THE REQUIREMENTS OF FM STANDARD 3011.</li><li>TEST, INSPECTION AND MAINTENANCE SHALL COMPLY WITH NFPA 72 CHAPTER 14 REQUIREMENTS.</li><li>EACH BUILDING TO BE A SEPARATE SPEAKER ZONE. (CFC, 907.6.3).</li><li>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.</li></ol>	<table><tr><td>CAMPUS BUILDING SQUARE FOOTAGE:</td><td>47,263</td></tr><tr><td>OCCUPANCY GROUP:</td><td>E: K-6</td></tr><tr><td>FIRE SPRINKLER:</td><td>BLDGS. D</td></tr><tr><td>YEAR CONSTRUCTED:</td><td>1988</td></tr><tr><td>FLOOR AREAS:</td><td>NO PROPOSED CHANGE</td></tr></table>	CAMPUS BUILDING SQUARE FOOTAGE:	47,263	OCCUPANCY GROUP:	E: K-6	FIRE SPRINKLER:	BLDGS. D	YEAR CONSTRUCTED:	1988	FLOOR AREAS:	NO PROPOSED CHANGE																																																																																																		
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SYMBOLS LIST

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-80V	DETAIL REFERENCE: DETAIL DESIGNATION SHEET NUMBER
2 - F3	FIXTURE IDENTIFICATION TAG: FIXTURE TYPE QUANTITY
- F54 -	UNDERGROUND CONDUIT DESIGNATION: CONDUIT SIZE IN INCHES CONDUIT SYSTEM DESIGNATION P: PRIMARY POWER S: SECONDARY POWER T: TELECOMMUNICATIONS 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 / 1 B	MOTOR CONTROL CENTERS: MCC DESIGNATION FLOOR NUMBER MOTOR CONTROL CENTER
2 E TX / 2 A	TRANSFORMERS: TRANSFORMER DESIGNATION FLOOR NUMBER TRANSFORMER POWER SOURCE NORMAL E: EMERGENCY or ESSENTIAL U: UPS C: CRITICAL S: LIFE SAFETY
2 T TB / 2 A	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)

FIRE ALARM

②	SMOKE DETECTOR INITIATING DEVICE, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
②	SMOKE DETECTOR INITIATING DEVICE, WALL MOUNTED IN FLUSH JUNCTION BOX, MAXIMUM 6" BELOW CEILING.
②	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.
②	SMOKE DETECTOR INITIATING DEVICE, DUCT MOUNTED TYPE WITH SAMPLING TUBE, LOCATED AT SUPPLY AIR FANS 2000cfm AND LARGER.
②	SMOKE DETECTOR INITIATING DEVICE, IN-DUCT MOUNTED TYPE AT DUCTED SUPPLY AIR FIRE/SMOKE DAMPERS.
② ②	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.
④	HEAT DETECTOR INITIATING DEVICE, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
④	HEAT DETECTOR INITIATING DEVICE, WALL MOUNTED IN FLUSH JUNCTION BOX, MAXIMUM 6" BELOW CEILING.
④	HEAT DETECTOR INITIATING DEVICE, MOUNTED TO STRUCTURE ABOVE SUSPENDED CEILING IN SURFACE JUNCTION BOX.
④	MANUAL PULL STATION INITIATING DEVICE, WALL MOUNTED AT +48" UON.
④	SPRINKLER SYSTEM WATER FLOW SWITCH, NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM.
④	SPRINKLER SYSTEM TAMPER SWITCH, NIEC. SYMBOL DENOTES INTERFACE FOR MONITORING CONNECTION FROM FIRE ALARM SYSTEM.
④	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.
④	MAGNETIC TYPE DOOR HOLD OPEN/RELEASE DEVICE, WALL MOUNTED, NIEC. SYMBOL DENOTES INTERFACE FOR POWER AND CONTROL CONNECTIONS FROM FIRE ALARM SYSTEM.
④	DOOR HOLD OPEN/RELEASE DEVICE INTEGRATED IN DOOR HARDWARE CLOSURE EQUIPMENT, NIEC. SYMBOL DENOTES INTERFACE FOR POWER AND CONTROL CONNECTIONS FROM FIRE ALARM SYSTEM.
④	AUDIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER.
④	VISIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER. NUMBER ASSOCIATED WITH "cd" REPRESENTS CANDELA RATING OF STROBE.
④	AUDIBLE/VISIBLE NOTIFICATION APPLIANCE, WALL MOUNTED, 6" BELOW CEILING OR +80" AFF, WHICHEVER IS LOWER. NUMBER ASSOCIATED WITH "cd" REPRESENTS CANDELA RATING OF STROBE.
④	AUDIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX.
④	VISIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX. NUMBER ASSOCIATED WITH "cd" REPRESENTS CANDELA RATING OF STROBE.
④	AUDIBLE/VISIBLE NOTIFICATION APPLIANCE, CEILING MOUNTED IN FLUSH BACK BOX. NUMBER ASSOCIATED WITH "cd" REPRESENTS CANDELA RATING OF STROBE.
④	FIRE ALARM BELL FOR SPRINKLER FLOW ANNUNCIATOR, NIEC. POWERED AND INSTALLED BY ELECTRICAL, WALL MOUNTED ON EXTERIOR OF BUILDING.
④	THERMISTOR SENSOR DEVICE IN FS&E LOBBIES FOR TEMPERATURE MONITORING, WALL MOUNTED 6" BELOW CEILING.
④	SMOKE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, CEILING MOUNTED IN FLUSH OR SURFACE JUNCTION BOX.
④	SMOKE ALARM FOR RESIDENTIAL DWELLING UNITS, NON-ADDRESSABLE, 120V DEVICE WITH BATTERY BACK-UP, WALL MOUNTED MAXIMUM 6" BELOW CEILING IN FLUSH JUNCTION BOX.
④	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.
④	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.
④	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.
E-----	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.
④-----	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.

SOME OF THESE SYMBOLS SHOWN MAY NOT BE USED ON THIS PROJECT

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
ATS	AUTOMATIC TRANSFER SWITCH	NC	NORMALLY CLOSED
BAS	BUILDING AUTOMATION SYSTEM	NF	NON-FUSED
		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
EPH	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		

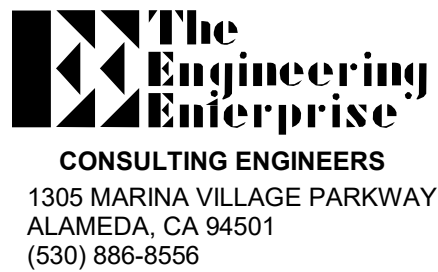
APPLIANCES

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

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET NAME	2020.01.01 SCHEMATIC DESIGN	2020.02.01 DESIGN DEVELOPMENT	2020.03.01 CONSTRUCTION DOCUMENTS	2020.04.01 SUBMITTAL 04
G0.0	COVER SHEET				
FA0.00	SYMBOLS, NOTES, ABBREVIATIONS, AND SHEET INDEX				
FA0.01	FA SCHEDULES, NOTES & MATRIX				
FA1.00	SITE PLAN				
FA2.00	FIRE ALARM PLAN - UNIT A, B & C				
FA2.01	FIRE ALARM PLAN - UNIT D, E, F, G, H, I & J				
FA2.02	FIRE ALARM PLAN - UNITS F26-F30				
FA3.00	FIRE ALARM CALCCS				
FA3.01	FIRE ALARM CALCCS				
FA3.02	FIRE ALARM RISER				
DFA1.00	FIRE ALARM DEMO PLAN - UNIT A, B & C				
DFA1.01	FIRE ALARM DEMO PLAN - UNIT D, E, F, G, H, I & J				
DFA1.02	FIRE ALARM DEMO PLAN - UNIT F26-F30				

IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
APP: 02-118691 INC.  
REVIEWED FOR IDENTIFICATION STAMP ACS  
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APP: 02-118691 INC. #  
REVISED FOR IDENTIFICATION STAMP ACS  
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SS: FLS ACS  
DATE:



BECKMAN ELEMENTARY SCHOOL  
FIRE ALARM MODERNIZATION  
2201 SCARBOROUGH DR, LODI, CA  
95240

REVISIONS

#	DESCRIPTION	DATE

DESIGNER: Designer

SCALE:

DATE: 2020.08.19

TITLE:

SYMBOLS, NOTES,  
ABBREVIATIONS,  
AND SHEET INDEX

DRAWING NO.

FA0.00



FIRE ALARM SYSTEM MATRIX

RESULT OF OPERATION											
		SMOKE DETECTOR	CO SMOKE DETECTOR	HEAT DETECTOR	DUCT DETECTOR	PULL STATION	ANAL	SYSTEM RESET	SIGNAL SILENCE	OPENING	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						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						X
SYSTEM NORMAL							X				X
DAMPER CLOSURE					X						
ROLL DOWN DOOR											

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	D	AQUA SEAL	2(1PR)	GRAY	N/A	UG MULTI-MODE FIBER
X	F	GENESIS	2(1PR)	RED/BLACK	#12	24 VDC POWER
X	H	AQUA SEAL	2(1PR)	RED/BLACK	#12	UG NOTIFICATION (NAC)
X	E	AQUA SEAL	2(1PR)	RED/BLACK	#16	UG VOICE NOTIFICATION
X	G	AQUA SEAL	2(1PR)	RED/BLACK	#12	UG 24 VDC POWER
X	C	AQUA SEAL	2(1PR)	RED/BLACK	#18	UG BUILDING INITIATION (SLC)

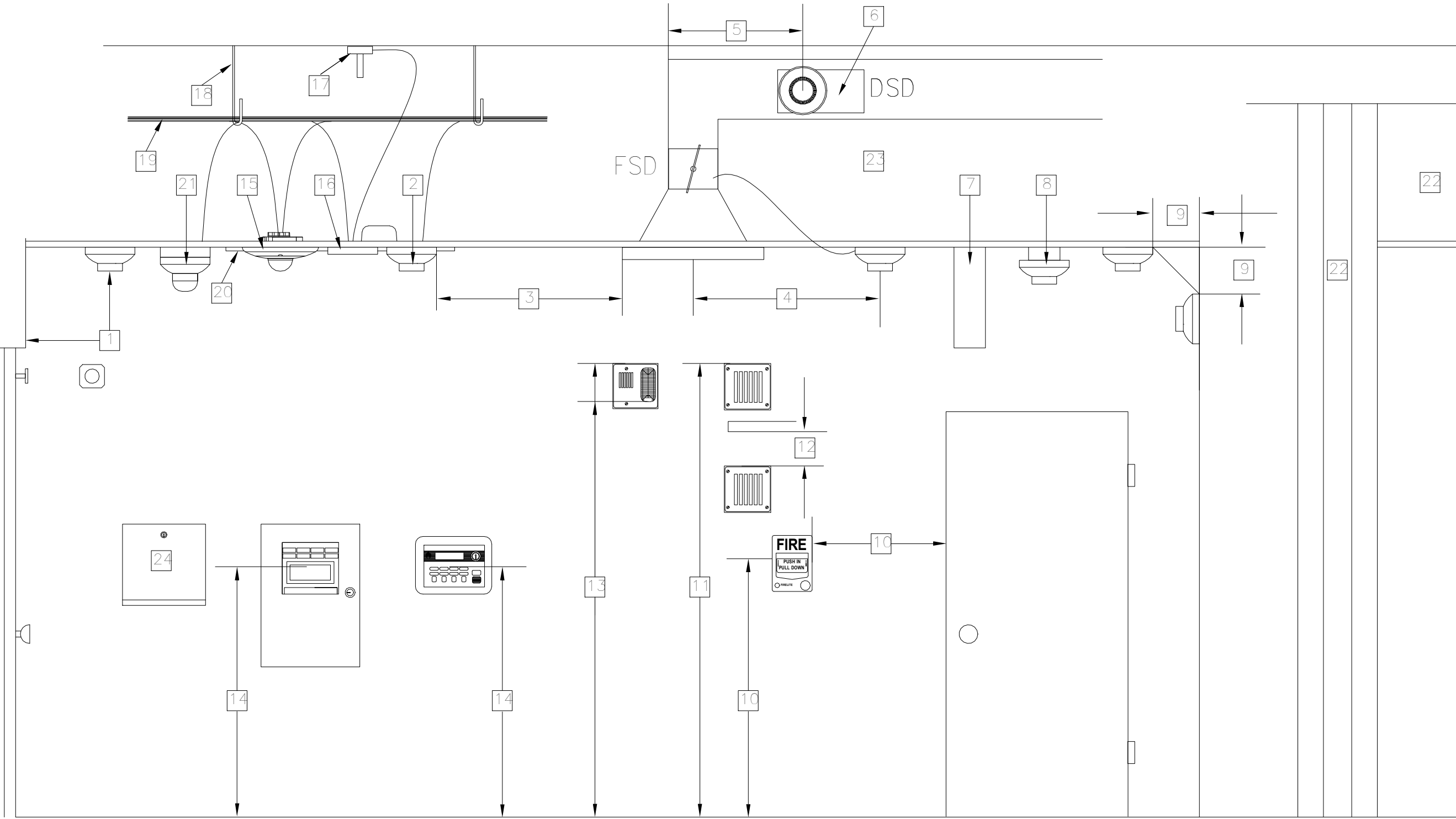
NUMBERED SHEET NOTES

- MOUNT DOOR HOLDER SMOKE DETECTOR MAXIMUM 3' FROM DOOR AND A MINIMUM OF 1'.
- MAXIMUM DISTANCE BETWEEN SMOKE DETECTORS IS 30' AND 15' FROM WALLS, MAXIMUM DISTANCE FROM A CORNER IS 21' WITH CEILING LESS 10' OR LESS.
- MOUNT SMOKE DETECTOR MINIMUM OF 3' AWAY FROM DIFFUSER VENT.
- MOUNT SMOKE DETECTOR FOR FIRE SMOKE DAMPER (FSD) WITHIN 3' OF SUPPLY VENT.
- DUCT SMOKE DETECTOR SHALL BE MOUNTED 6 TO 10 TIMES THE DIAMETER OF DUCT FROM BEND OR OBSTRUCTION.
- 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 200cfm 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 DETECTOR TRIGGER HVAC SHUT-DOWN.
- BEAM POCKET SPOT DETECTOR ARE REQUIRED FOR BEAMS GREATER THAN 18" BELOW CEILING AND SPACED MORE THAN 8' ON CENTER. BEAM 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.
  - 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.
  - 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.
- BEAMS PROJECTING LESS THAN 4" SHALL BE TREATED AS A SMOOTH CEILING.
- SMOKE DETECTORS SHALL BE MOUNTED ON THE CEILING MINIMUM 4" FROM WALL, AND 4" MINIMUM TO 12" MAXIMUM FROM CEILING MOUNTED ON WALL.
- MOUNT MANUAL PULL STATIONS AT 48" TO TOP OF BOX AFF, AND NO GREATER THAN 5' FROM DOOR.
- MOUNT EXTERNAL HORN AT 90° MINIMUM AND 100° MAXIMUM TO THE TOP OF THE DEVICE.
- FOR APPLICATIONS WHERE THE STRUCTURE IS BELOW 90°, MOUNT HORN AS HIGH AS WITH A MINIMUM OF 6" CLEARANCE ABOVE OF THE DEVICE.
- MOUNT HORN / SPEAKER STROBE AND STROBE ONLY THE THE ENTIRE LENS IS WITHIN 80° AND 96° AFF.
- MOUNT FIRE ALARM CONTROL PANELS AND ANNUNCIATORS AT A MAXIMUM OF 60" TO THE TOP OF THE CONTROL PANEL OR KEY BOARDS.
- CEILING MOUNTED HORN / SPEAKER STROBE.
- MONITOR MODULE.
- RATE ANTICIPATOR HEAT DETECTOR, MOUNTED IN ABOVE CEILING / ATTIC SPACE.
- APPROVED WIRE MANAGEMENT @, HOOK OR D-RING.
- ABOVE CEILING CIRCUITS ROUTING IN AN ACCESSIBLE ATTIC SPACE.
- NON-ACCESSIBLE CEILINGS MUST USE EITHER EMT OR APPROVED WIREMOLD RACEWAY, AS SHOWN ON PLANS.
- MULTI-CRITERIA PHOTOELECTRIC SMOKE / CO DETECTOR WITH SOUNDER BASE. MOUNT IN AREAS WHERE FOSSIL FUEL IS USED.
- SMOKE / HEAT DETECTION COVERAGE IS REQUIRED IN ALL COMBUSTIBLE AREAS, UNLESS:
  - CEILING IS ATTACHED DIRECTLY TO THE UNDERSIDE OF THE SUPPORTING BEAM OR ROOF DECK.
  - CONCEALED SPACE IS ENTIRELY FILLED WITH NON-COMBUSTIBLE INSULATION.
  - THE SMALL CONCEALED SPACE OVER ROOMS THAT DO NOT EXCEED 50 SQ. FT. IN AREA.
  - 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. NFPA 72 17.5.3.1.1.
- 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.
- 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.
	[FACP]	FIRE ALARM CONTROL PANEL	GAMEWELL	E-3	6/30/2021	7165-1703-0125
	[AMP]	AMPLIFIER	GAMEWELL	AM-50	6/30/2021	7165-1703-0125
	[BP-X]	REMOTE POWER BOOSTER	GAMEWELL	HPF24-S8	6/30/2021	7315-1637-0102
	[IDT]	INTELLIGENT DUCT DETECTOR	GAMEWELL	XP95	6/30/2021	7272-1703-0155
	[IDH]	INTELLIGENT HEAT DETECTOR	GAMEWELL	ATD-L2F	6/30/2021	7270-1703-0115
	[AH]	ATTIC HEAT DETECTOR	GAMEWELL	5622	6/30/2021	7270-1653-0167
	[AH]	INTELLIGENT ATTIC HEAT DETECTOR 194 FIXED TEMP	GAMEWELL	ATD-L3H	6/30/2021	7270-1703-0502
	[PD]	PHOTO SMOKE DETECTOR	GAMEWELL	ASD-PL3	6/30/2021	7272-1703-0501
	[FCO]	FIRE/CO DETECTOR WITH SOUNDER BASE	GAMEWELL SYSTEM SENSOR	MCS-COF B200S	6/30/2021 6/30/2021	7275-1703-0175 7300-1653-0213
	[DM]	DUAL MONITOR MODULE	GAMEWELL	AMM-2IF	6/30/2021	7300-1703-0107
	[SM]	MONITOR MODULE	GAMEWELL	AMM-4F	6/30/2021	7300-1703-0102
	[IM]	ISOLATION MODULE	GAMEWELL	M500X	6/30/2021	7300-1653-0103
	[CR]	CONTROL RELAY	GAMEWELL	AOM-2RF	6/30/2021	7300-1703-0102
	[P]	PULL STATION	GAMEWELL	MS-7	6/30/2021	7150-1703-0119
	[SSC]	SPEAKER STROBE (CEILING)	SYSTEM SENSOR	SPSCWL	6/30/2021	7320-1653-0505
	[SSC]	STROBE (CEILING)	SYSTEM SENSOR	SCWL	6/30/2021	7125-1653-0504
	[SSC]	OUTDOOR SPEAKER (CEILING)	SYSTEM SENSOR	SPWK	6/30/2021	7320-1653-0201
	[SSC]	OUTDOOR SPEAKER	SYSTEM SENSOR	SPWK	6/30/2021	7320-1653-0201
	[SSW]	SPEAKER STROBE (WALL)	SYSTEM SENSOR	SPSW	6/30/2021	7320-1653-0201
	[SW]	STROBE (WALL)	SYSTEM SENSOR	SW	6/30/2021	7125-1653-0156
	[EOLR]	END-OF-LINE RELAY	SYSTEM SENSOR	EOLR-1	6/30/2021	7300-1653-0103
	[DOC]	DOCUMENT BOX	SPACE AGE TECH	SRD-ACE-11	6/30/2021	7300-0553-0110
	[LOC]	LOCAL OPERATING CONSOLE	GAMEWELL	E-3 SERIES	6/30/2021	7165-1703-0125

X = COMPONENT USED IN CURRENT PROJECT.  
N/A = COMPONENT NOT USED IN CURRENT PROJECT.



FIRE ALARM NOTES

- WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:  
STATE CALIFORNIA CODE OF REGULATIONS (CCR) 201 9 TITLE 24 CALIFORNIA BUILDING CODE  
PART 2, 2019 CALIFORNIA BUILDING CODE (CBC), 201 9 IBC.  
PART 3, 2019 CALIFORNIA ELECTRICAL CODE (CEC), 201 9 NEC.  
PART 4, 2019 CALIFORNIA MECHANICAL CODE (CMC), 201 9 UMC.  
PART 5, 2019 CALIFORNIA PLUMBING CODE (CPC), 201 9 UPC.  
PART 9, 2019 CALIFORNIA FIRE CODE (CFC) BASED ON 201 9 IFC.  
2016 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 13, 72, 80, 90A, 99, AND 101.
- 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.
- 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.
- A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION.
- 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.
- DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND/OR TESTING.
- ALL PENETRATIONS THROUGH RATED ASSEMBLIES, REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITHIN THE SPECIFICATION WITHIN THE FIRE ALARM SECTION.
- AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 DECIBELS (dba) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dba ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION AT LEAST 90 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIED SPACE WITHIN THE BUILDING.
- AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.
- THE CONTRACTOR SHALL ADJUST/INSTALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
- 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 16 CANDRELLA, VISUAL DEVICES WITHIN 5' FROM EACH OTHER SHALL BE SYNCHRONIZED.
- UNDERGROUND AND EXTERIOR CONDUIT TO HAVE WATERTIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
- 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 THIN OR THINW.
- 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.
- 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.
- 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.
- 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.
- 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.
- THE INSTALLER CONTRACTOR SHALL PROVIDE A RECORD OF COMPLETION PER NFPA 72, FIGURE 10.18.2.1.1.
- THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
- SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
- 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 UJUS BY UL OR SHALL MEET THE REQUIREMENTS OF FM STANDARD 3011.
- 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 6) NFPA 72 SECTION 14.4.1.
- TEST, INSPECTION AND MAINTENANCE SHALL COMPLY WITH NFPA 72 CHAPTER 14 REQUIREMENTS.
- ALL DUCT SMOKE DETECTORS SHALL HAVE A KEYS TEST SWITCH MOUNTED AT 42" A.F.F., FIELD VERIFY LOCATION.

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 CABLEING, CABLEING 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

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DATE:

**The Engineering Enterprise**  
CONSULTING ENGINEERS  
1305 MARINA VILLAGE PARKWAY  
ALAMEDA, CA 94501  
(510) 886-8559



BECKMAN ELEMENTARY SCHOOL  
FIRE ALARM MODERNIZATION  
2201 SCARBOROUGH DR, LODI, CA  
95240

REVISIONS

#	DESCRIPTION	DATE

DESIGNER:

SCALE: 12" = 1'-0"

DATE: 2020.08.19

TITLE:

FA SCHEDULES,  
NOTES & MATRIX

DRAWING NO.

FA0.01

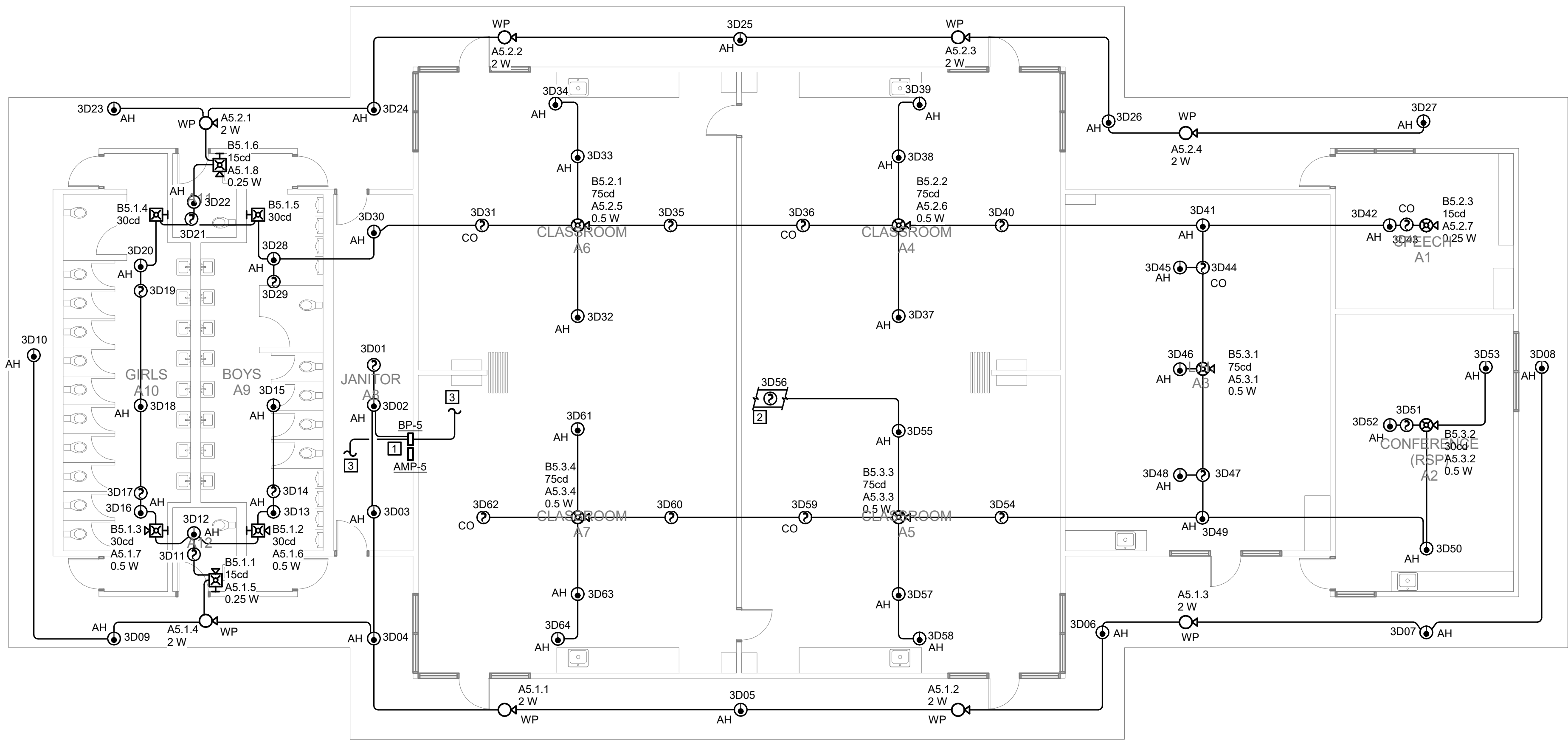




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#.	DESCRIPTION
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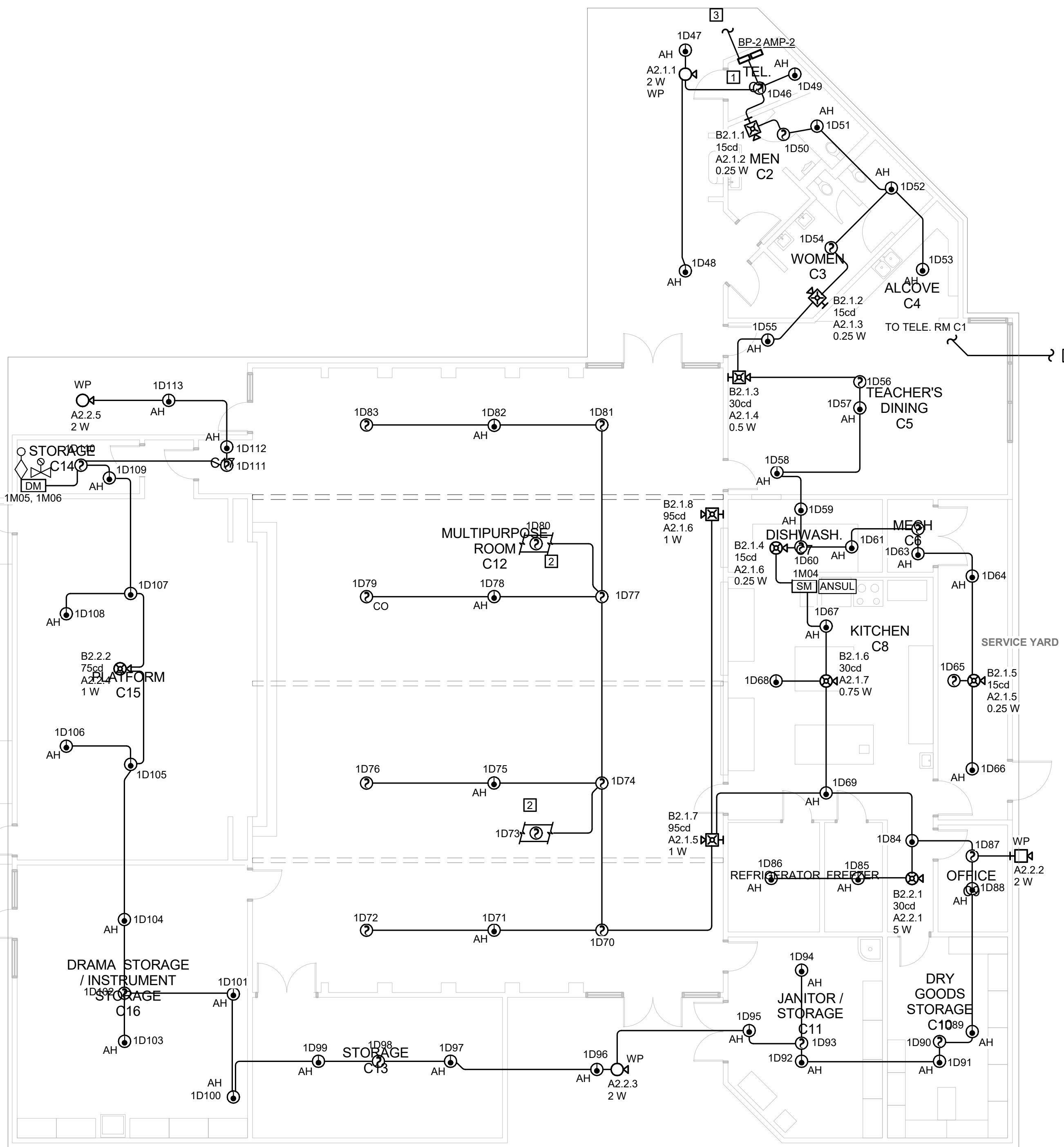
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SCALE: 1/32" = 1'-0"
DATE: 2020.08.19
TITLE:  SITE PLAN
DRAWING NO.  FA100





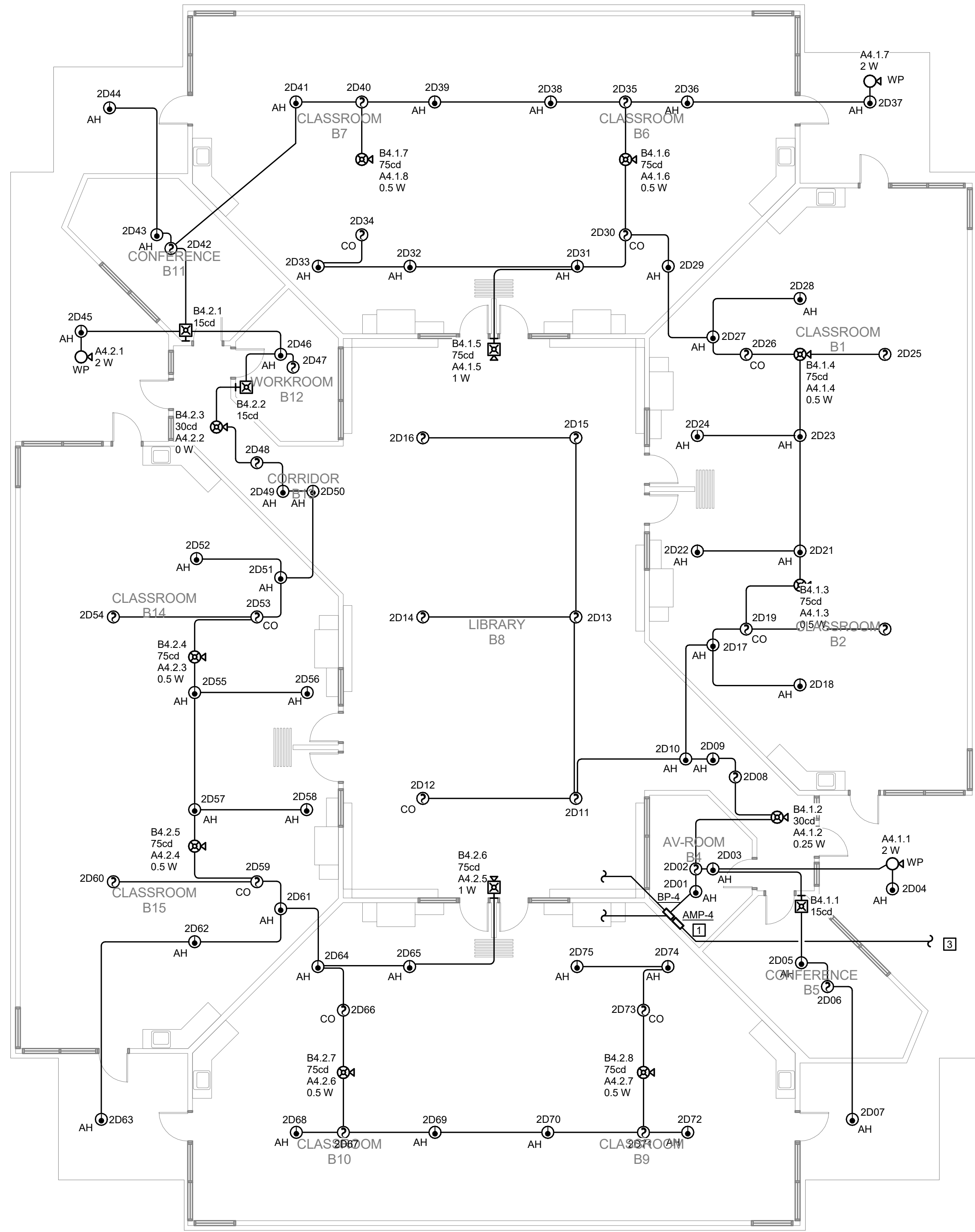
**1 FIRE ALARM PLAN - UNIT A**

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



**3 FIRE ALARM PLAN - UNIT C**

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



**2 FIRE ALARM PLAN - UNIT B**

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

## GENERAL SHEET NOTES

- FIRE ALARM SYSTEM INSTALLATION SHALL COMPLY WITH ALL REQUIREMENTS OF APPLICABLE CODES, STANDARDS AND STATE REGULATIONS.
- FIRE ALARM CIRCUITS AND CIRCUIT ROUTING ARE SHOWN SCHEMATICALLY FOR CLARITY ILLUSTRATING THE WIRING CONFIGURATION NECESSARY FOR PROPER CIRCUIT SUPERVISION.
- COORDINATE CEILING MOUNTED FIRE ALARM DEVICE LOCATIONS WITH NEW LIGHT FIXTURES TO AVOID CONFLICTS.
- DO NOT INSTALL FIRE ALARM DEVICES BACK TO BACK IN STUD WALLS.
- 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.
- ALL SPEAKER, SPEAKER/STROBES SHALL HAVE MINIMUM 0.75" CONDUIT PATHWAYS. USE OF EXISTING 0.5" CONDUIT PATHWAY IS NOT ACCEPTABLE.
- 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.
- REFER TO E3.00 FOR RISER DIAGRAMS.
- CONTRACTOR SHALL PROVIDE 120V DEDICATED RED LOCKING CIRCUIT BREAKER PER FIRE ALARM SYSTEM PANELS PER LOCATION.
- CONTRACTOR SHALL PROVIDE CEILING ACCESS PANEL AS NEEDED AT ALL NON-LAYIN TYPE CEILINGS, WHERE HEAT DETECTOR ABOVE CEILING IS INDICATED.

## NUMBERED SHEET NOTES

- PROVIDE SURGE PROTECTION DEVICES FOR ALL POWER-LIMITED FIRE ALARM CIRCUITS EXTENDING BEYOND ONE BUILDING. PROTECTIVE DEVICES SHALL BE PROVIDED AT THE POINT WHERE THE CABLING ENTERS EACH BUILDING.
- DUCT SMOKE DETECTOR WITH INTEGRATED CONTROL RELAY SHALL INITIATION HVAC SHUTDOWN.
- SEE RISER SHEET FA 4.00 FOR UG ROUTING DIAGRAM.

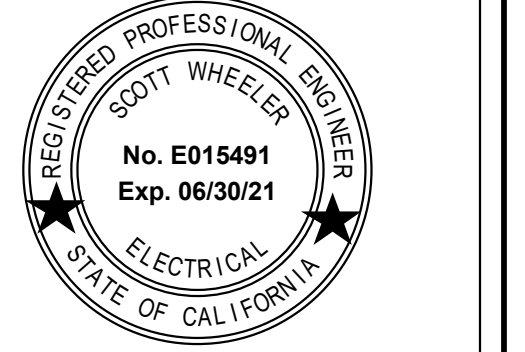
**BECKMAN ELEMENTARY SCHOOL  
FIRE ALARM MODERNIZATION  
2201 SCARBOROUGH DR, LODI, CA  
95240**

#	DESCRIPTION	DATE

DESIGNER: Designer  
SCALE: 1/8" = 1'-0"  
DATE: 2020.08.19  
TITLE:  
**FIRE ALARM PLAN  
- UNIT A, B & C**

DRAWING NO.  
**FA2.00**

**The Engineering Enterprise**  
CONSULTING ENGINEERS  
1305 MARINA VILLAGE PARKWAY  
ALAMEDA, CA 94501  
(510) 886-8556



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- 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 WIREWOLD WHEN IN EXPOSED SPACES. MINIMUM SIZE OF CONDUIT SHALL BE 0.75". UTILIZE WIREMOLD 90 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 JO-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 8" SQ. X 2 7/8" DEEP BOX, FOR SURFACE MOUNTED DEVICES. FLUENT AND DOWNWARD FLOWING MUST BE MOUNTED IN THE MANUFACTURERS DESIGNATED BACK BOXES, COULNT TO MATCH DEVICE.
- H. REFER TO E3.00 FOR RISER DIAGRAMS.
- I. CONTRACTOR SHALL PROVIDE 120V DEDICATED RED LOCKING CIRCUIT BREAKER FOR FIRE ALARM SYSTEM PANELS PER LOCATION.
- J. CONTRACTOR SHALL PROVIDE CEILING ACCESS PANEL AS NEEDED AT ALL NON-LAYIN TYPE CEILINGS, WHERE HET DETECTOR ABOVE CEILING IS INSTALLED.

- 1 PROVIDE SURGE PROTECTION DEVICES FOR ALL POWER-LIMITED FIRE ALARM CIRCUITS EXTENDING BEYOND ONE BUILDING. PROTECTIVE DEVICES SHALL BE PROVIDED AT THE POINT WHERE THE CABLES ENTERS EACH BUILDING.
- 2 DUCT SMOKE DETECTOR WITH INTEGRATED CONTROL RELAY SHALL INITIATE HVAC SHUTDOWN.
- 3 SEE RISER SHEET FA 4.00 FOR UG ROUTING DIAGRAM.
- 4 AREA SMOKE DETECTORS TO ACTIVATE CONTROL RELAY TO INITIATE (FSD) FIRE/SMOKE DAMPER CLOSURE.



<b>DESIGNER:</b>
<b>SCALE:</b> 1/8" = 1'-0"
<b>DATE:</b> 2020.08.19
<b>TITLE:</b>  <b>FIRE ALARM PLAN</b> <b>- UNIT D, E, F, G, H,</b> <b>I &amp; J</b>
<b>DRAWING NO.</b>  <b>FA2.01</b>

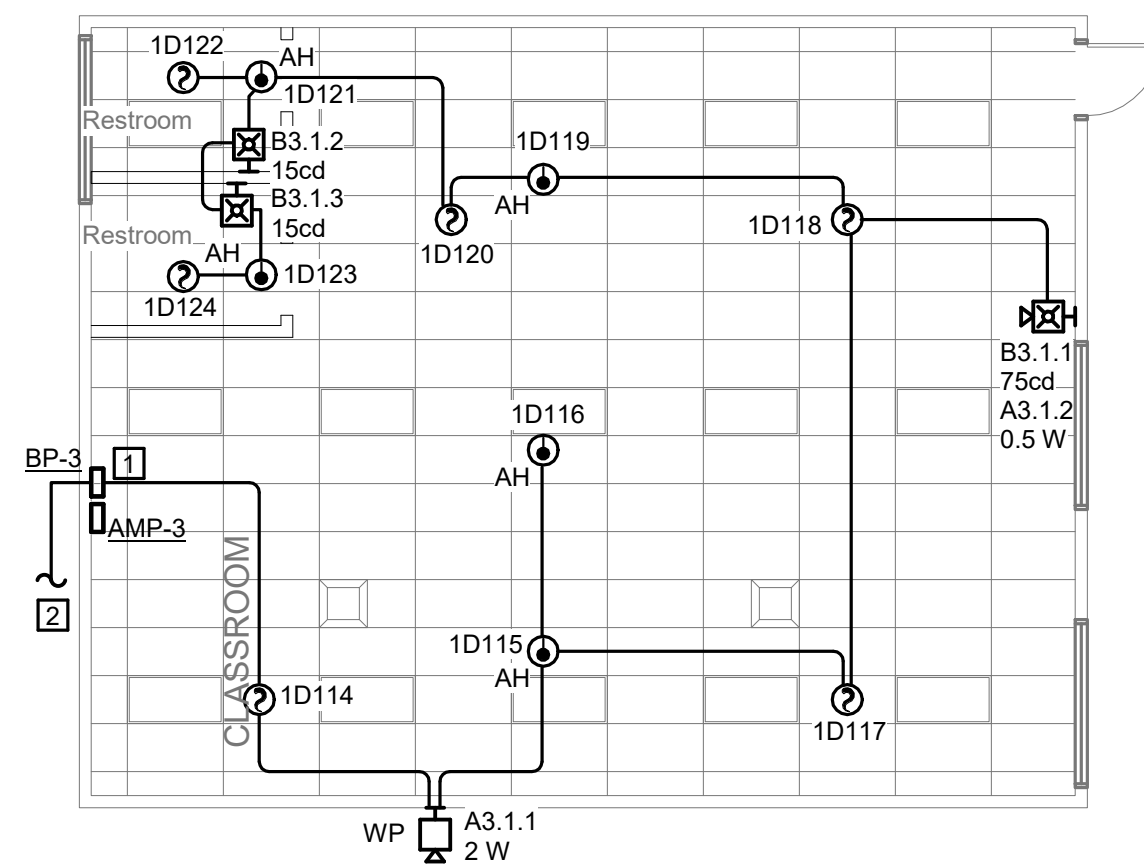
BECKMAN ELEMENTARY SCHOOL  
FIRE ALARM MODERNIZATION  
2201 SCARBOROUGH DR, LODI, CA  
95240

#### 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 JACKS.
- F. ALL SPEAKER, SPEAKERS/STROBES SHALL HAVE MINIMUM 0.75" CONDUIT PATHWAYS. USE OF EXISTING 0.5" CONDUIT PATHWAY IS NOT ACCEPTABLE.
- G. ENSURE THAT SPEAKERS/STROBES ARE MOUNTED IN 5" SQ. X 2 7/8" DEEP BOX, FOR SURFACE MOUNTED DEVICES. FIRE MOUNTED DEVICES SHALL BE MOUNTED IN THE MANUFACTURER DESIGNATED BACK BOXES, COLORED TO MATCH DEVICE.
- H. REFER TO E3.00 FOR RISER DIAGRAMS.
- I. CONTRACTOR SHALL PROVIDE 120V DEDICATED RED LOCKING CIRCUIT BREAKER FOR FIRE ALARM SYSTEM PANELS PER LOCATION.
- J. CONTRACTOR SHALL PROVIDE CEILING ACCESS PANELS AS NOTED AT ALL NON-FIYAN TYPE CEILING, WHERE HEAD DETECTOR ABOVE CEILING IS REQUIRED.

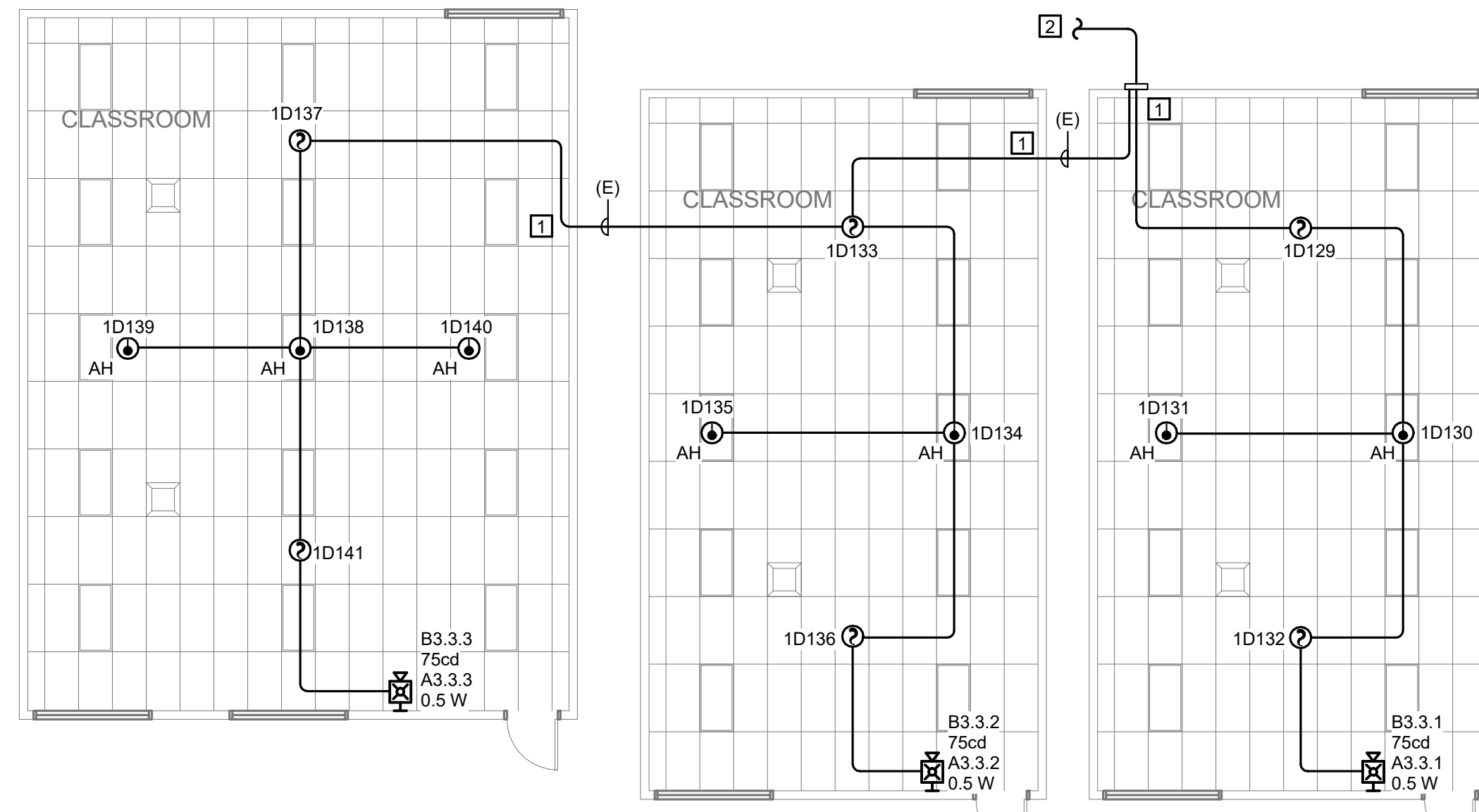
NUMBERED SHEET NOTES

- 1 PROVIDE SURGE PROTECTION DEVICES FOR ALL POWER-LIMITED FIRE ALARM CIRCUITS EXTENDING BEYOND ONE BUILDING. PROTECTIVE DEVICES SHALL BE PROVIDED AT THE POINT WHERE THE CABLE ENTERS EACH BUILDING.
- 2 SEE RISER SHEET FA 4.00 FOR UG ROUTING DIAGRAM.

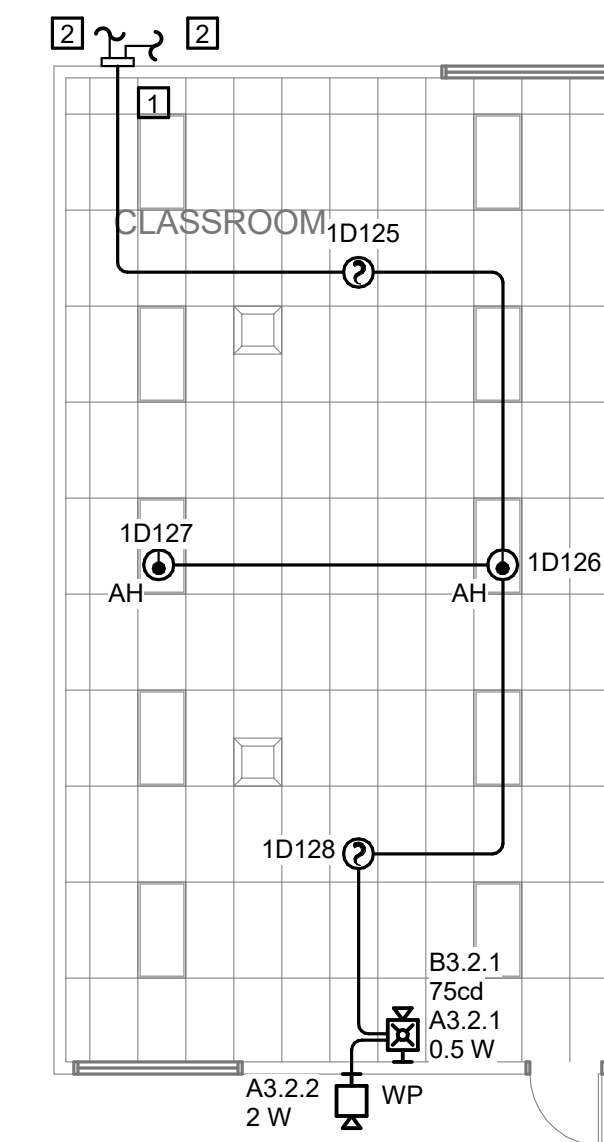


# 1 FIRE ALARM PLAN - UNIT F26

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



2 FIRE ALARM PLAN - UNIT F27-F29  
SCALE: 1/8" = 1'-0"



3 FIRE ALARM PLAN - UNIT F30  
SCALE: 1/8" = 1'-0"

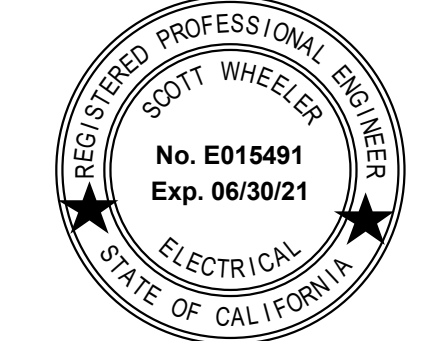
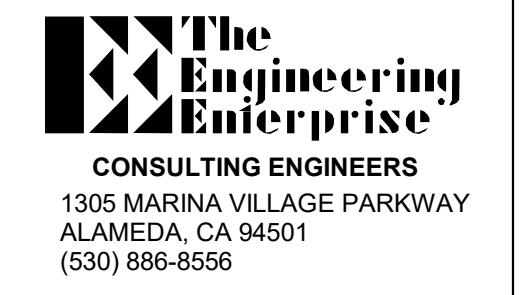
IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT

APP: 02-118691 INC:  
REVIEWED FOR

SS ☐ FLS ☒ ACS ☐  
DATE: 03/01/2021

REVIEWED FOR

SS \_\_\_\_\_ FLS \_\_\_\_\_ ACS \_\_\_\_\_  
DATE: \_\_\_\_\_



BECKMAN ELEMENTARY SCHOOL  
FIRE ALARM MODERNIZATION  
2201 SCARBOROUGH DR, LODI, CA  
95240

REVISIONS		
#	DESCRIPTION	DATE

<b>DESIGNER:</b> Designer
<b>SCALE:</b> 1/8" = 1'-0"
<b>DATE:</b> 2020.08.19
<b>TITLE:</b> <b>FIRE ALARM PLAN</b> <b>- UNITS F26-F30</b>

DRAWING NO.

**FA2.02**



HONEYWELL | Online Tools for Fire  
2.0.14

**PROJECT DETAILS**  
Beckman  
California

**PREPARED BY**  
Phil Burden  
1125 High St, Auburn, California, United States

**Voltage Drop Calculations**

CIRCUIT NAME: NAC Circuit 1  
POWER SOURCE: BP-1  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 5  
7.83 % (0.235) AMPS USED  
.44 % (0.090) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSWL	15				0.043	30	20.372	20.355	20.328	20.286
2	SPSWL	15				0.043	30	20.349	20.318	20.269	20.193
3	SPSWL	15				0.043	30	20.331	20.289	20.224	20.121
4	SPSWL	15				0.043	30	20.318	20.269	20.192	20.076
5	SPSWL	30				0.063	30	20.310	20.257	20.173	20.039
VOLTAGE								0.090	0.143	0.227	0.361

CIRCUIT NAME: NAC Circuit 2  
POWER SOURCE: BP-1  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 6  
11.8 % (0.414) AMPS USED  
1.02 % (0.209) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSWL	15				0.043	30	20.350	20.321	20.274	20.199
2	SPSWL	15				0.043	30	20.305	20.250	20.161	20.010
3	SPSWL	15				0.043	30	20.265	20.187	20.061	19.860
4	SPSWL	30				0.063	30	20.231	20.132	19.974	19.722
5	SPSCWL	75				0.111	30	20.204	20.090	19.906	19.614
6	SPSCWL	75				0.111	30	20.151	20.069	19.872	19.560
VOLTAGE								0.209	0.331	0.528	0.840

CIRCUIT NAME: NAC Circuit 3  
POWER SOURCE: BP-1  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 0  
0 AMPS USED  
0 VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
NO DEVICE(S) FOUND											

CIRCUIT NAME: NAC Circuit 4  
POWER SOURCE: BP-1  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 0  
0 AMPS USED  
0 VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
NO DEVICE(S) FOUND											

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**PROJECT DETAILS**  
Beckman BP-4  
California

**PREPARED BY**  
Phil Burden  
1125 High St, Auburn, California, United States

**Voltage Drop Calculations**

CIRCUIT NAME: NAC Circuit 1  
POWER SOURCE: BP-4  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 7  
22.47 % (0.680) AMPS USED  
1.48 % (0.302) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSWL	75				0.107	30	20.318	20.270	20.183	20.070
2	SPSCWL	75				0.111	30	20.249	20.160	20.018	19.792
3	SPSCWL	75				0.111	30	20.189	20.072	19.877	19.586
4	SPSCWL	75				0.111	30	20.151	20.025	19.770	19.396
5	SPSCWL	75				0.111	30	20.122	19.959	19.697	19.262
6	SPSCWL	30				0.063	30	20.106	19.934	19.658	19.219
7	SPSW (Strd)	15				0.066	30	20.086	19.921	19.638	19.182
VOLTAGE								0.302	0.479	0.762	1.211

CIRCUIT NAME: NAC Circuit 2  
POWER SOURCE: BP-4  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 8  
24.87 % (0.746) AMPS USED  
2.07 % (0.422) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSW (Strd)	15				0.066	30	20.310	20.252	20.175	20.038
2	SPSW (Strd)	15				0.066	30	20.228	20.127	19.966	19.708
3	SPSCWL	75				0.111	30	20.154	20.009	19.779	19.410
4	SPSCWL	75				0.111	30	20.093	19.912	19.626	19.166
5	SPSCWL	75				0.111	30	20.046	19.838	19.507	19.076
6	SPSCWL	75				0.111	30	20.012	19.784	19.421	18.840
7	SPSCWL	30				0.063	30	19.991	19.751	19.369	18.756
8	SPSCWL	75				0.107	30	19.978	19.731	19.336	18.706
VOLTAGE								0.422	0.666	1.064	1.694

CIRCUIT NAME: NAC Circuit 3  
POWER SOURCE: BP-4  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 4  
5.75 % (0.172) AMPS USED  
.25 % (0.052) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSWL	15				0.043	30	20.379	20.367	20.348	20.317
2	SPSWL	15				0.043	30	20.363	20.342	20.309	20.254
3	SPSWL	15				0.043	30	20.353	20.326	20.283	20.212
4	SPSWL	15				0.043	30	20.348	20.318	20.270	20.191
VOLTAGE								0.052	0.082	0.130	0.209

CIRCUIT NAME: NAC Circuit 4  
POWER SOURCE: BP-4  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 0  
0 AMPS USED  
0 VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
NO DEVICE(S) FOUND											

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2.0.14

**PROJECT DETAILS**  
Beckman BP-2  
California

**PREPARED BY**  
Phil Burden  
1125 High St, Auburn, California, United States

**Voltage Drop Calculations**

CIRCUIT NAME: NAC Circuit 1  
POWER SOURCE: BP-2  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 8  
17.87 % (0.536) AMPS USED  
1.38 % (0.281) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSWL	15				0.043	30	20.335	20.297	20.237	20.140
2	SPSWL	15				0.043	30	20.276	20.203	20.067	19.901
3	SPSWL	95				0.121	30	20.222	20.117	19.950	19.683
4	SPSWL	95				0.121	30	20.182	20.054	19.850	19.524
5	SPSWL	30				0.063	30	20.157	20.014	19.787	19.423
6	SPSCWL	15				0.041	30	20.140	19.966	19.743	19.353
7	SPSCWL	15				0.041	30	20.127	19.966	19.711	19.303
8	SPSCWL	30				0.063	30	20.119	19.954	19.692	19.272
VOLTAGE								0.281	0.446	0.708	1.128

CIRCUIT NAME: NAC Circuit 2  
POWER SOURCE: BP-2  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 2  
5.8 % (0.174) AMPS USED  
.17 % (0.034) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	30				0.063	30	20.379	20.367	20.347	20.316
2	SPSCWL	75				0.111	30	20.366	20.346	20.313	20.262
VOLTAGE								0.034	0.054	0.087	0.138

CIRCUIT NAME: NAC Circuit 3  
POWER SOURCE: BP-2  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 0  
0 AMPS USED  
0 VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
NO DEVICE(S) FOUND											

CIRCUIT NAME: NAC Circuit 4  
POWER SOURCE: BP-2  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 0  
0 AMPS USED  
0 VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
NO DEVICE(S) FOUND											

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2.0.14

**PROJECT DETAILS**  
Beckman BP-5  
California

**PREPARED BY**  
Phil Burden  
1125 High St, Auburn, California, United States

**Voltage Drop Calculations**

CIRCUIT NAME: NAC Circuit 1  
POWER SOURCE: BP-5  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 6  
13.33 % (0.400) AMPS USED  
.95 % (0.199) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSWL	15				0.043	30	20.352	20.323	20.278	20.204
2	SPSWL	15				0.043	30	20.309	20.255	20.169	20.033
3	SPSWL	30				0.063	30	20.271	20.195	20.073	19.841
4	SPSWL	30				0.063	30	20.241	20.147	19.996	19.759
5	SPSW (Strd)	30				0.094	30	20.218	20.111	19.939	19.668
6	SPSW (Strd)	30				0.094	30	20.207	20.093	19.910	19.620
VOLTAGE								0.193	0.307	0.490	0.778

CIRCUIT NAME: NAC Circuit 2  
POWER SOURCE: BP-5  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 17  
27.9 % (0.837) AMPS USED  
3.84 % (0.783) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	75				0.111	30	20.269	20.240	20.144	19.994
2	SPSCWL	75				0.111	30	20.211	20.103	19.924	19.642
3	SPSCWL	15				0.043	30	20.137	19.983	19.737	19.344
4	SPSCWL	15				0.043	30	20.068	19.873	19.562	19.065
5	SPSCWL	15				0.041	30	20.004	19.771	19.400	18.808
6	SPSCWL	15				0.043	30	19.945	19.677	19.250	18.569
7	SPSCWL	30				0.043	30	19.881	19.550	19.113	18.352
8	SPSCWL	15				0.041	30	19.842	19.513	19.088	18.151
9	SPSCWL	15				0.043	30	19.797	19.442	18.876	17.972
10	SPSCWL	15				0.043	30	19.757	19.376	18.776	17.813
11	SPSCWL	15				0.043	30	19.722	19.324	18.689	17.674
12	SPSCWL	15				0.043	30	19.690	19.272	18.614	17.550
13	SPSCWL	15				0.043	30	19.667	19.238	18.552	17.486
14	SPSCWL	15				0.043	30	19.647	19.207	18.502	17.376
15	SPSCWL	15				0.043	30	19.630	19.183	18.465	17.314
16	SPSCWL	15				0.041	30	19.622	19.167	18.440	17.275
17	SPSCWL	15				0.043	30	19.617	19.159	18.428	17.258
VOLTAGE								0.783	1.243	1.972	3.144

CIRCUIT NAME: NAC Circuit 3  
POWER SOURCE: BP-5  
MODEL NUMBER: HPF2456  
BRAND: HPP  
VOLTS: 20.4  
AWG: 12  
POWER: DC  
AMPS: 3

CLASS: CLASS B  
TOTAL DEVICES: 4  
12.2 % (0.396) AMPS USED  
.63 % (0.128) VOLTAGE DROP

#	MODEL	CANDELA	PATTERN	VOLUME	TONE	CURRENT	DISTANCE	12 AWG	14 AWG	16 AWG	18 AWG
1	SPSCWL	30				0.063	30	20.352	20.324	20.279	20.208
2	SPSCWL	75				0.111	30	20.312	20.260	20.178	20.047
3	SPSCWL	75				0.111	30	20.285	20.218	20.110	19.939
4	SPSCWL	75				0.111	30	20.272	20.197	20.076	19.885
							VOLTAGE	0.128	0.203	0.324	0.515



Note 2: Use the dropdowns and the **yellow** cells to enter values

Standby Load Current (Amps)	0.0860 Amps	Required Standby Time in Hours	X	24	=	2.064 AH
Alarm Load Current (Amps)	2.3722 Amps	Required Alarm Time in Hours	X	15	=	0.593 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		

Note 1: You are **fully** responsible for verifying these calculations

Note 2: Use the dropdowns and the **yellow** cells to enter values

Standby Load Current (Amps)		0.0860 Amps	X	24	=	2.064 AH
Alarm Load Current (Amps)		2.3969 Amps	X	15	=	0.599 AH
			Total Current Load		=	2.66 AH
			*Multiply by the Derating Factor		=	x 1.20
			Total Ampere Hours Required		=	3.20 AH
Recommended Batteries:			7AH BATTERIES			

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

Note 2: Use the dropdowns and the **yellow** cells to enter values.

		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)	2.4005 Amps	X 15	= 0.600 AH
		Total Current Load	
		2.66 AH	
		*Multiply by the Derating Factor = x 1.20	
		Total Ampere Hours Required	
		3.20 AH	
Recommended Batteries:		7AH BATTERIES	

**Note 1: You are fully responsible for verifying these calculations.**

Note 2: Use the dropdowns and the **yellow** cells to enter values.

Standby Load Current (Amps)	0.0860 Amps	Required Standby Time in Hours $\frac{24}{0.0860} = 2.064 \text{ AH}$
Alarm Load Current (Amps)	2.4995 Amps	Required Alarm Time in Hours $\frac{15}{2.4995} = 0.625 \text{ AH}$
<b>Total Current Load</b>		<b>2.69 AH</b>
*Multiply by the Derating Factor =		x 1.20
<b>Total Ampere Hours Required</b>		<b>3.23 AH</b>
<b>Recommended Batteries:</b>		<b>7AH BATTERIES</b>

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

Note 2: Use the dropdowns and the **yellow** cells to enter values.

		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)	2.3121 Amps	X 15	= 0.578 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.

**Note 1: You are fully responsible for verifying these calculations.**

Note 2: Use the dropdowns and the **yellow** cells to enter values.

Standby Load Current (Amps)		0.0860 Amps	Required Standby Time in Hours	
			X 24	= 2.064 AH
Alarm Load Current (Amps)		2.2378 Amps	Required Alarm Time in Hours	
			X 15	= 0.559 AH
Total Current Load				2.62 AH
*Multiply by the Derating Factor			=	x 1.20
Total Ampere Hours Required				3.15 AH
Recommended Batteries:			7AH BATTERIES	

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

# FACP Calculations

Location: **BECKMAN**

Signaling Line Circuit Loading		DEVICE		SUBTOTAL	
Qty	Device	Standby	Alarm	Standby	Alarm
1	GAMEWELL SERIES E3	0.091000	0.150000	0.091000	0.150000
117	ASD P-3 PHOTO ELECTRIC SMOKE	0.000200	0.002000	0.023400	0.234000
	ATD L3 THERMAL HEAT 135	0.000200	0.002000		
208	ATD L3H THERMAL HEAT 130	0.000200	0.002000	0.041600	0.416000
	ISOLATION MODULE	0.000300	0.000300		
3	RAM-2P MONITOR MODULE	0.000375	0.000600	0.001125	0.001800
1	MS-7 PULL STATION	0.000300	0.003000	0.000300	0.003000
	ACOM-2PF RELAY CONTROL MODULE	0.000375	0.006500	0.000750	0.013000
	ACOM-2SF RELAY SUPERVISED CONTROL MODULE	0.000375	0.006500		
3	ILU-1 LOOP EXPANDER	0.000000	0.000100	0.000243	0.000357
4	DUCT DETECTOR SL-Q4MR	0.000005	0.000028	0.000040	0.000014
Signaling Line Circuit Load:				0.146838	0.818261

**Notification Circuit Loading**

DEVICE	CD	ΔVAV (EA)	NAC1	NAC2	NAC3	NAC4	NAC5	NAC6	TOTAL
SPEAKER STROBE	15	0.041							
SPEAKER STROBE	20	0.063							
SPEAKER STROBE	75	0.111							
SPEAKER STROBE	110	0.158							
STROBE	15	0.071							
STROBE	20	0.074							
STROBE	75	0.153							
STROBE	110	0.195							
SPEAKER SOUNDER									

Notification Appliance Circuit Loading

**Notification Circuit Voltage Drop**

CIRCUIT ID	TOTAL A	LENGTH F	AVG	%VD	VD
NAC1			14		
NAC2			14		
NAC3			16		
NAC4			14		
NAC5			18		
NAC6			12		

**Battery Calculation**

Standby	Alarm
Totals Panel Current: 0.149 0.818	
Hours in Standby: 24	
Standby Ah	3.97
Minutes in Alarm:	15
Alarm Ah	0.20
Spare/Future Capacity - 20%:	0.76
Minimum Battery Capacity Required - Ah:	4.53

Provide next largest capacity battery

**Panel Loading**

Panel Capacity (Amps):	8.00	
Panel Load (Amps):	0.97	
<div style="display: flex; align-items: center; justify-content: center;"> <div style="font-size: 2em; margin-right: 10px;">➔</div> <div> <b>#1</b>      <b>#2</b> </div> </div>		

ALL LOADS ARE EXPRESSED IN AMPS

**The Engineering Enterprise**  
CONSULTING ENGINEERS  
1305 MARINA VILLAGE PARKWAY  
ALAMEDA, CA 94501  
(530) 886-8556



BECKMAN ELEMENTARY SCHOOL  
FIRE ALARM MODERNIZATION  
22201 SCARBOROUGH DR, LODI, CA  
95240

## REVISIONS

#	DESCRIPTION	DATE

DESIGNER:

**SCALE:**

DATE:2020.08.19

**TITLE:**

## FIRE ALARM CALCS

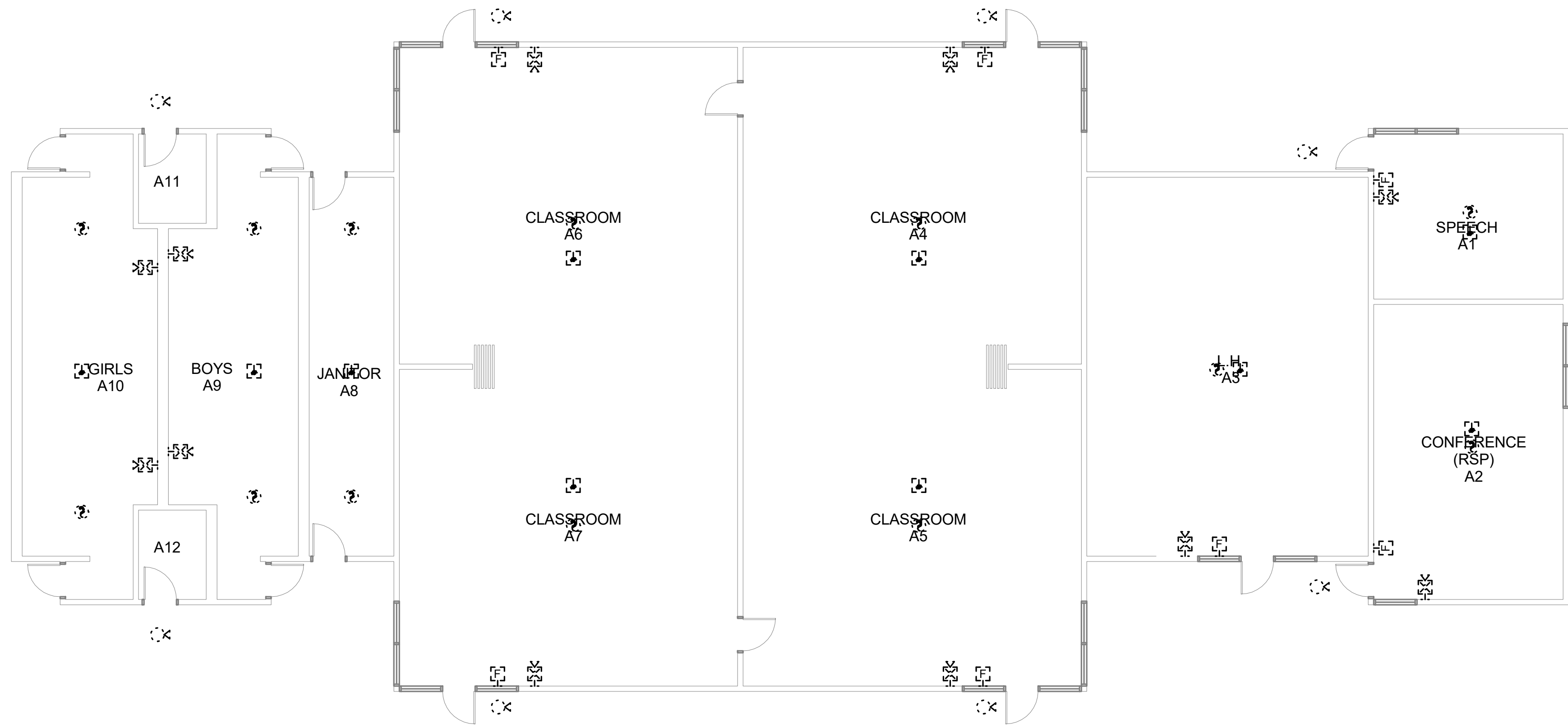
DRAWING NO.

**FA3.01**

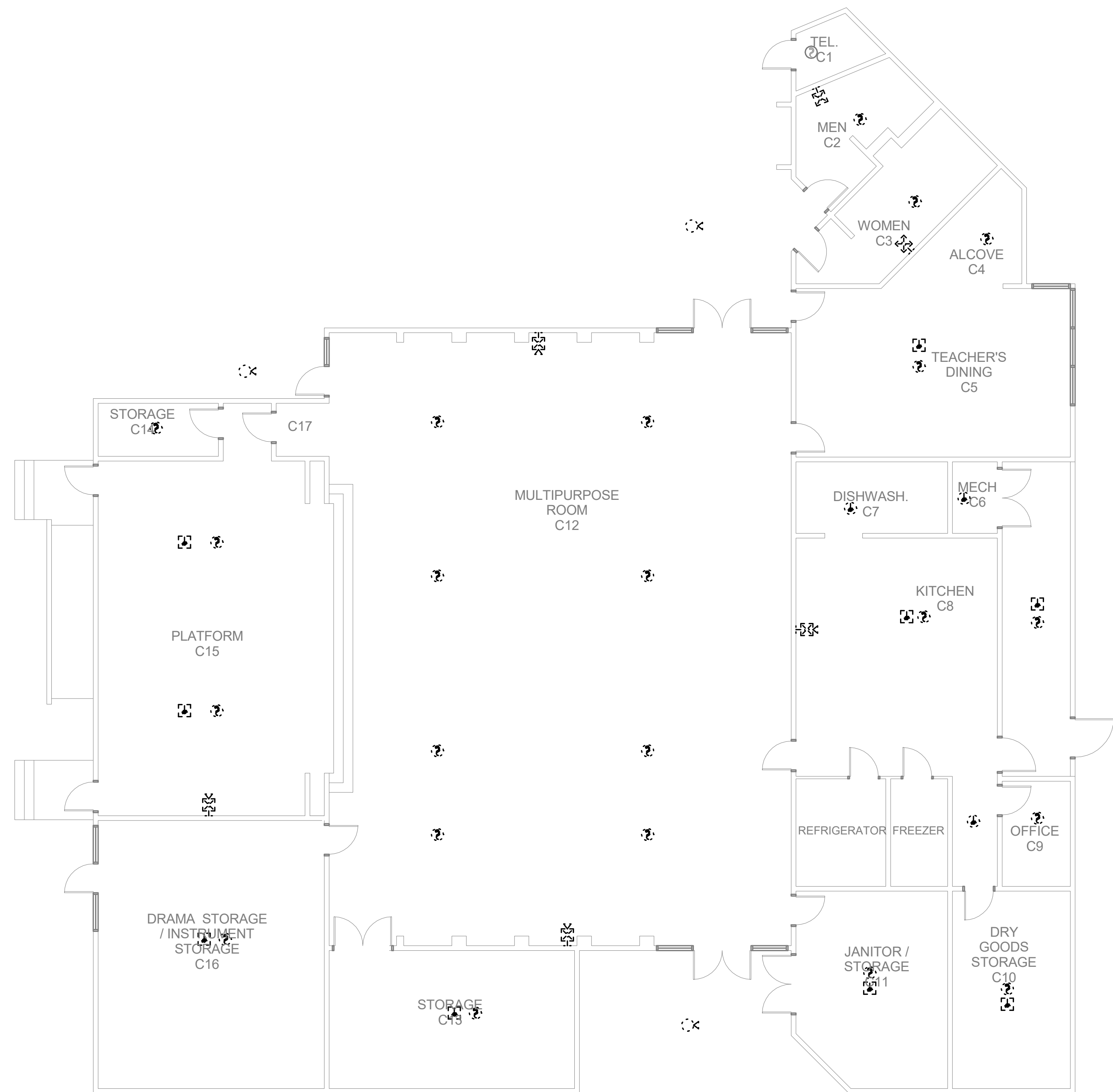




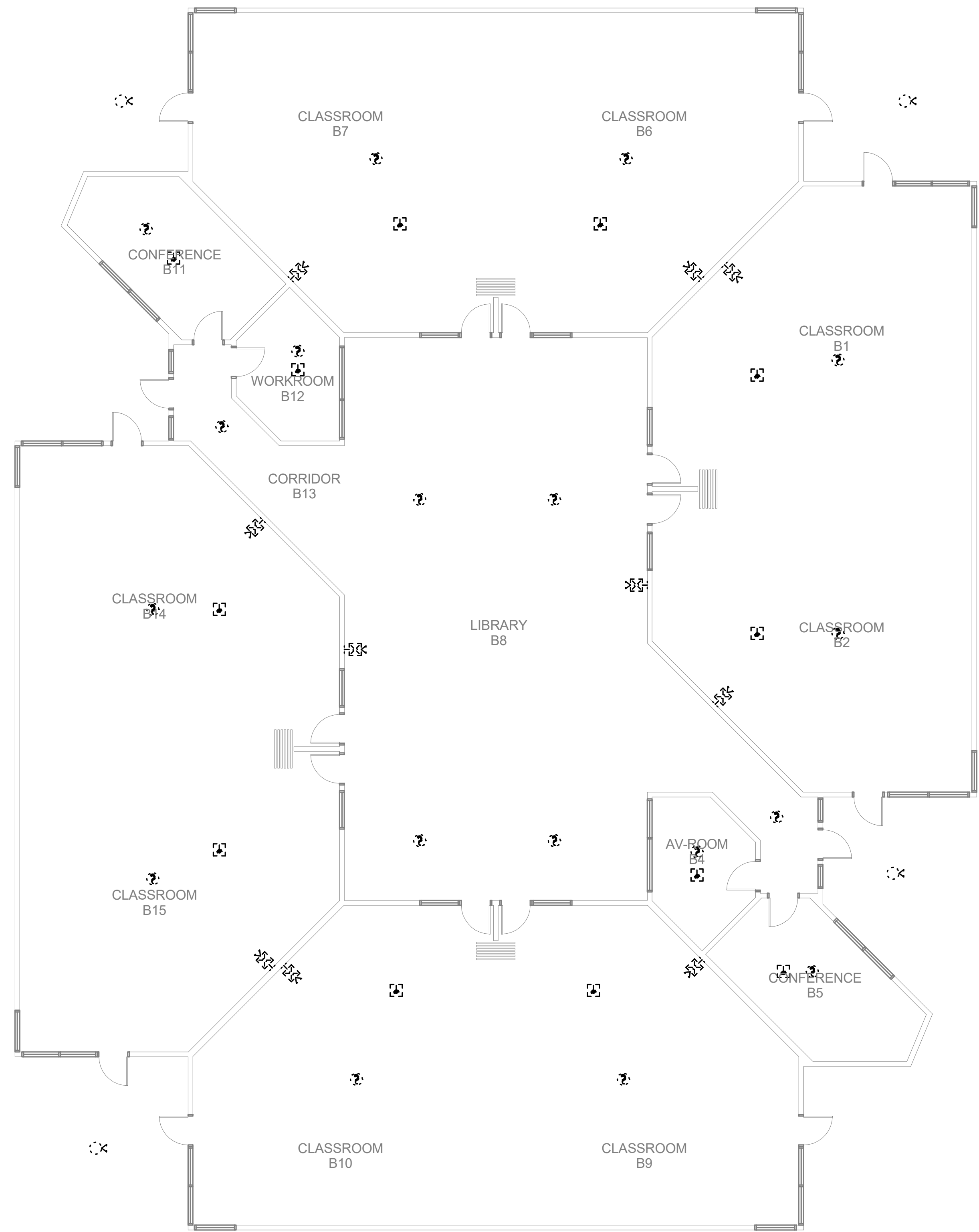




1 DEMOLITION FIRE ALARM PLAN - UNIT 26  
SCALE: 1/8" = 1'-0"



3 DEMOLITION FIRE ALARM PLAN - UNIT C  
SCALE: 1/8" = 1'-0"



2 DEMOLITION FIRE ALARM PLAN - UNIT B  
SCALE: 1/8" = 1'-0"

## GENERAL SHEET NOTES

- TO REMOVE ALL UNUSED DEVICES, CIRCUITRY AND BACK TO SOURCE.
- WHEN A DEVICE IS REMOVED FROM AN EXISTING WALL WHICH WILL REMAIN, PATCH WALL TO MATCH EXISTING OR NEW FINISH.
- 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 ABANDONED DEVICE BOXES.
- REMOVE ALL UNUSED FIRE ALARM CONTROL PANELS, BOOSTER PANELS AND REMOTE ANNUNCIATORS.

IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
APP: 02-118691 INC.  
REVIEWED FOR  
IDENTIFICATION STAMP  
DIV. OF THE STATE ARCHITECT  
DATE: 03/01/2021  
APP: 02-118691 INC.  
REVIEWED FOR  
SS: FLS. ACS.  
DATE:

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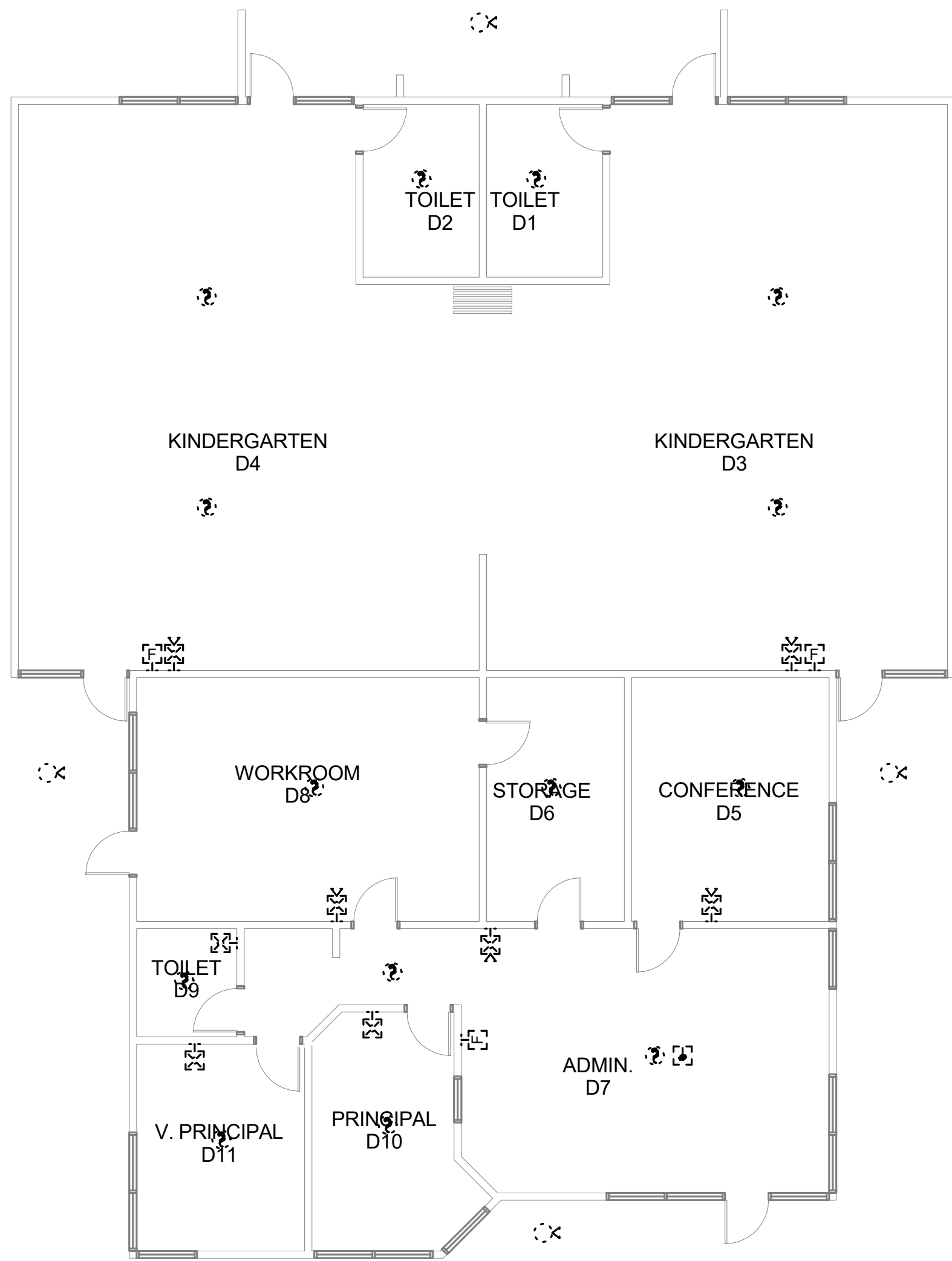


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95240**

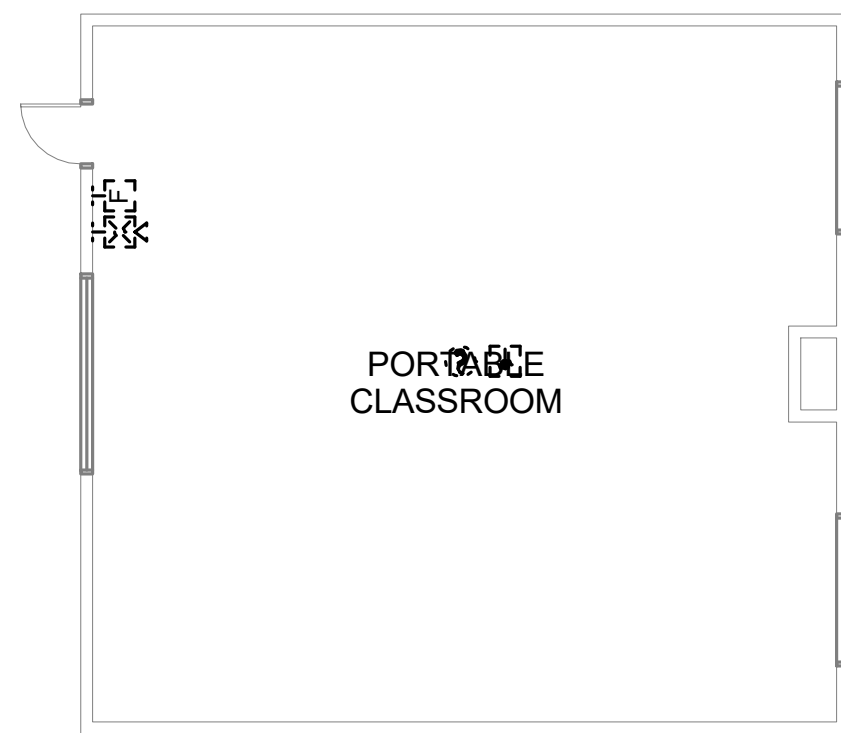
REVISIONS	
#	DESCRIPTION
DATE	

**DESIGNER:**  
**SCALE:** 1/8" = 1'-0"  
**DATE:** 2020.08.19  
**TITLE:**  
**FIRE ALARM  
DEMO PLAN -  
UNIT A, B & C**  
**DRAWING NO.**  
**DFA1.00**

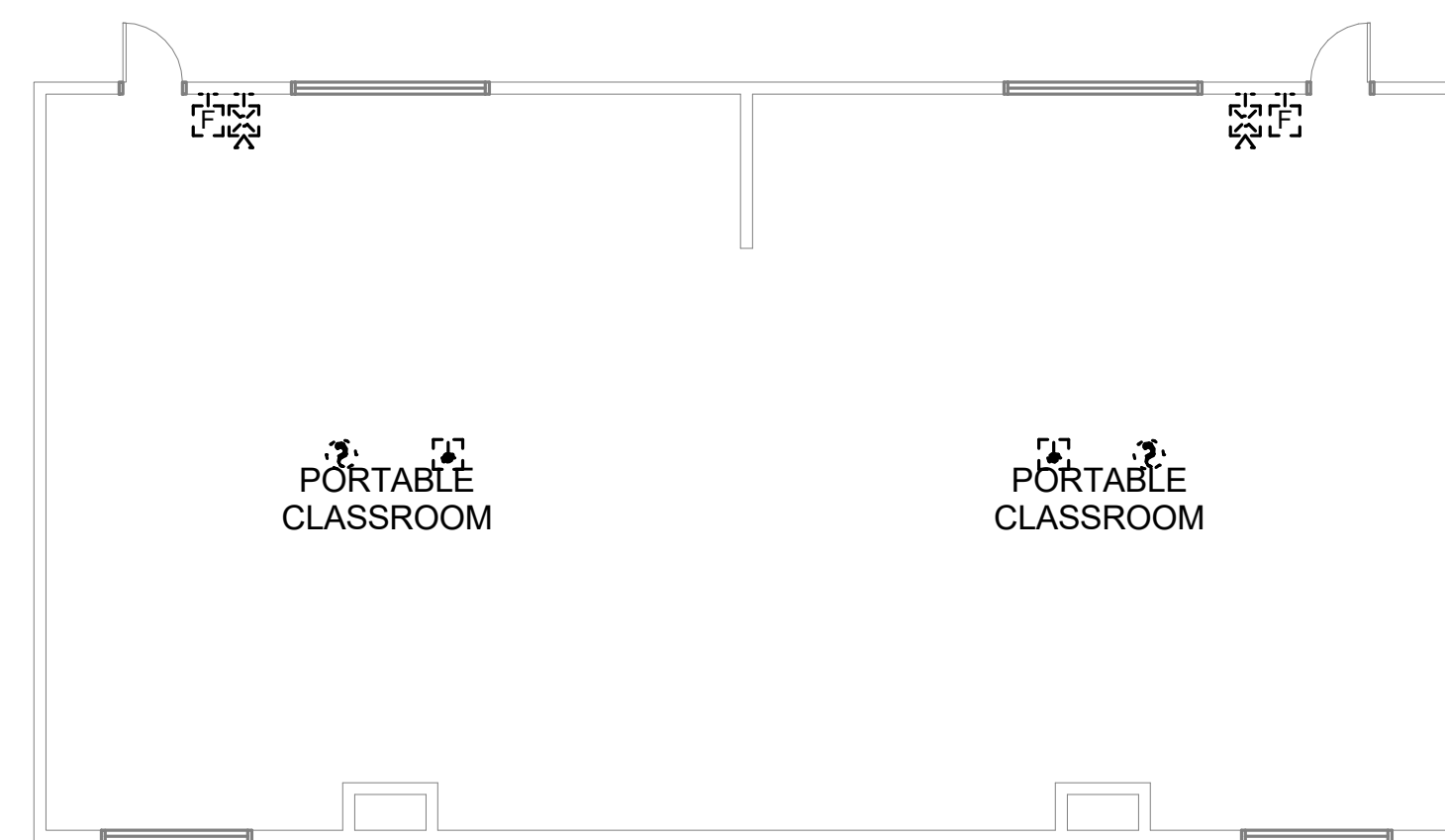




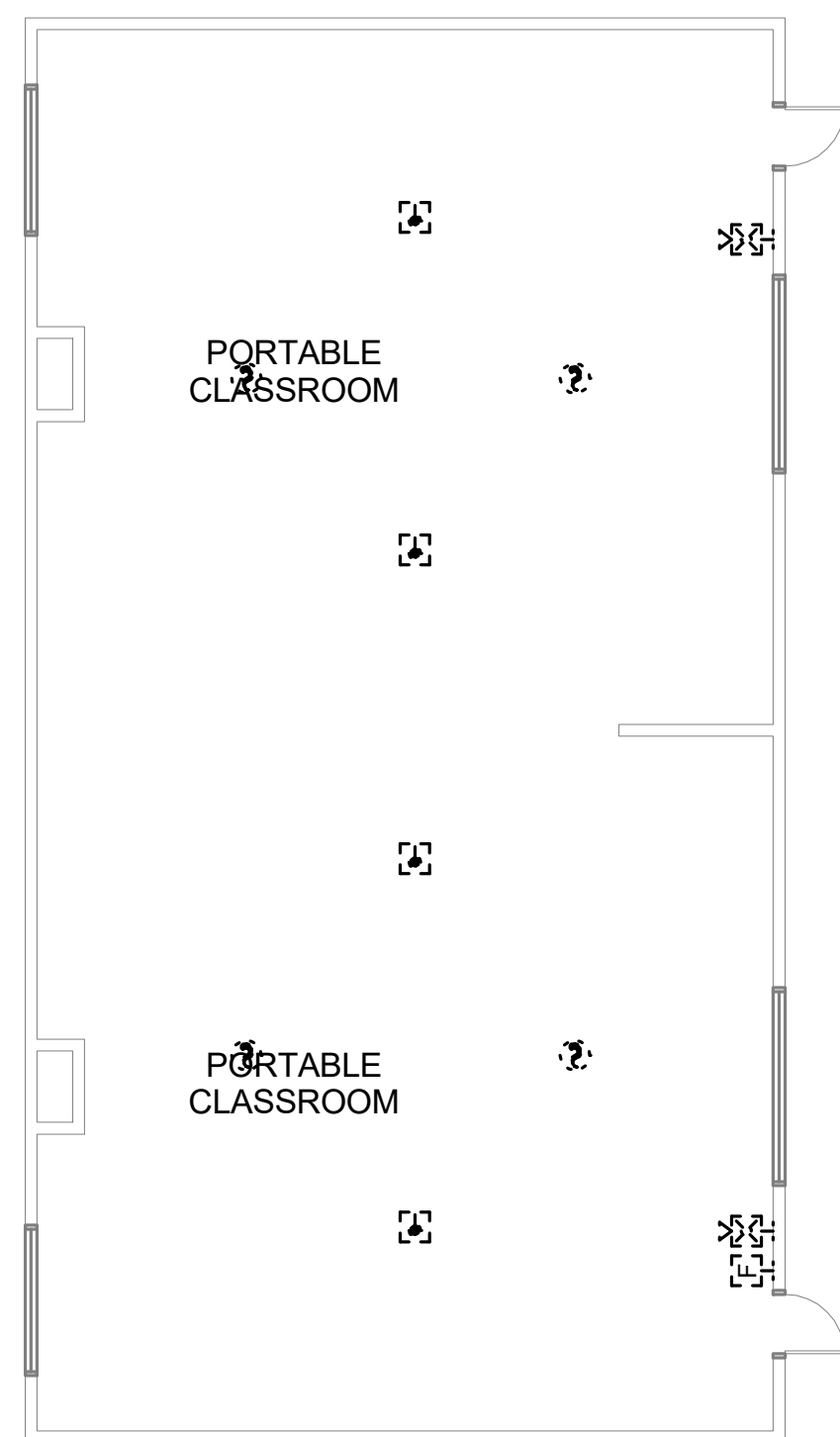
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SCALE: 1/8" = 1'-0"



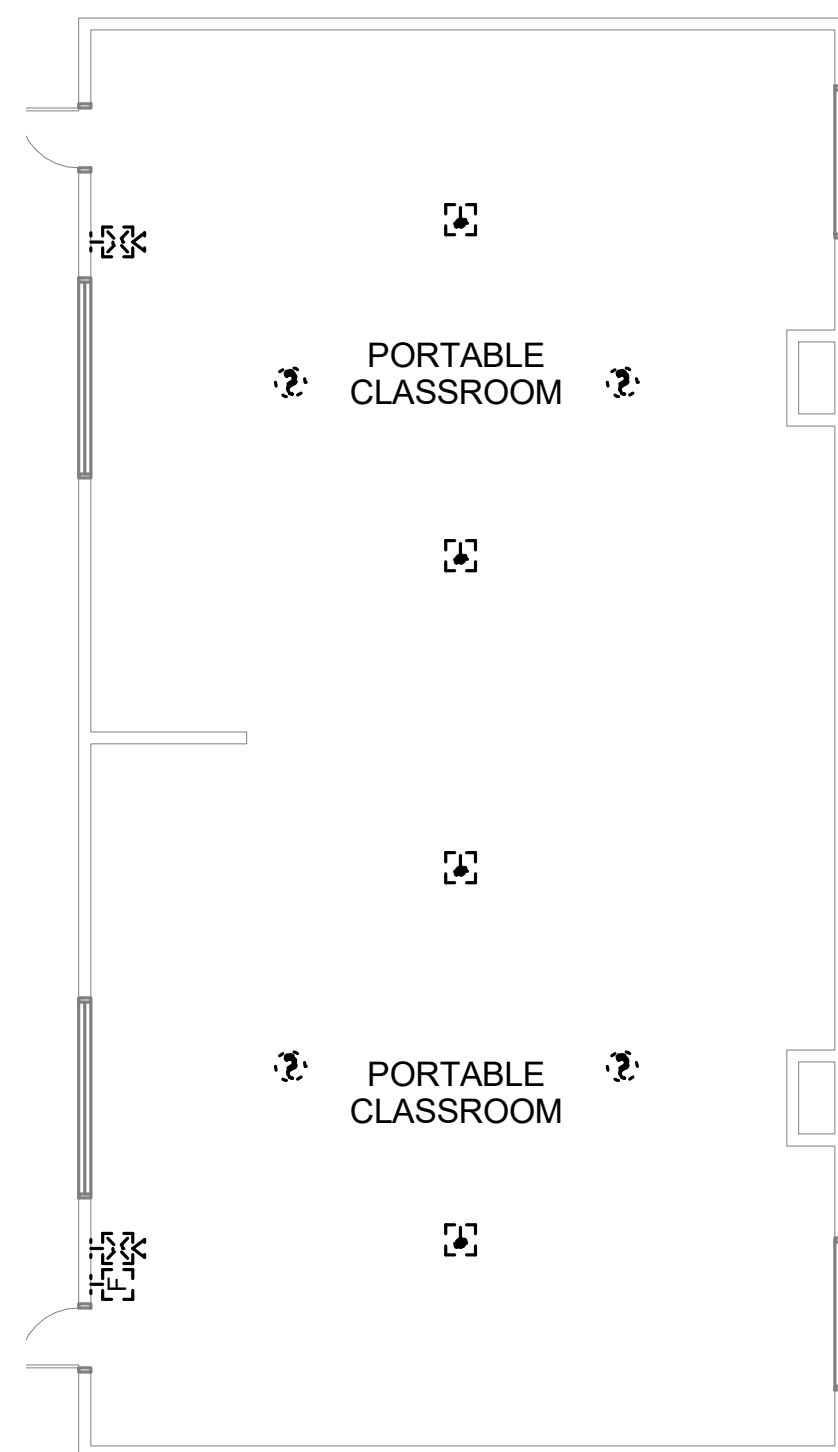
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SCALE: 1/8" = 1'-0"



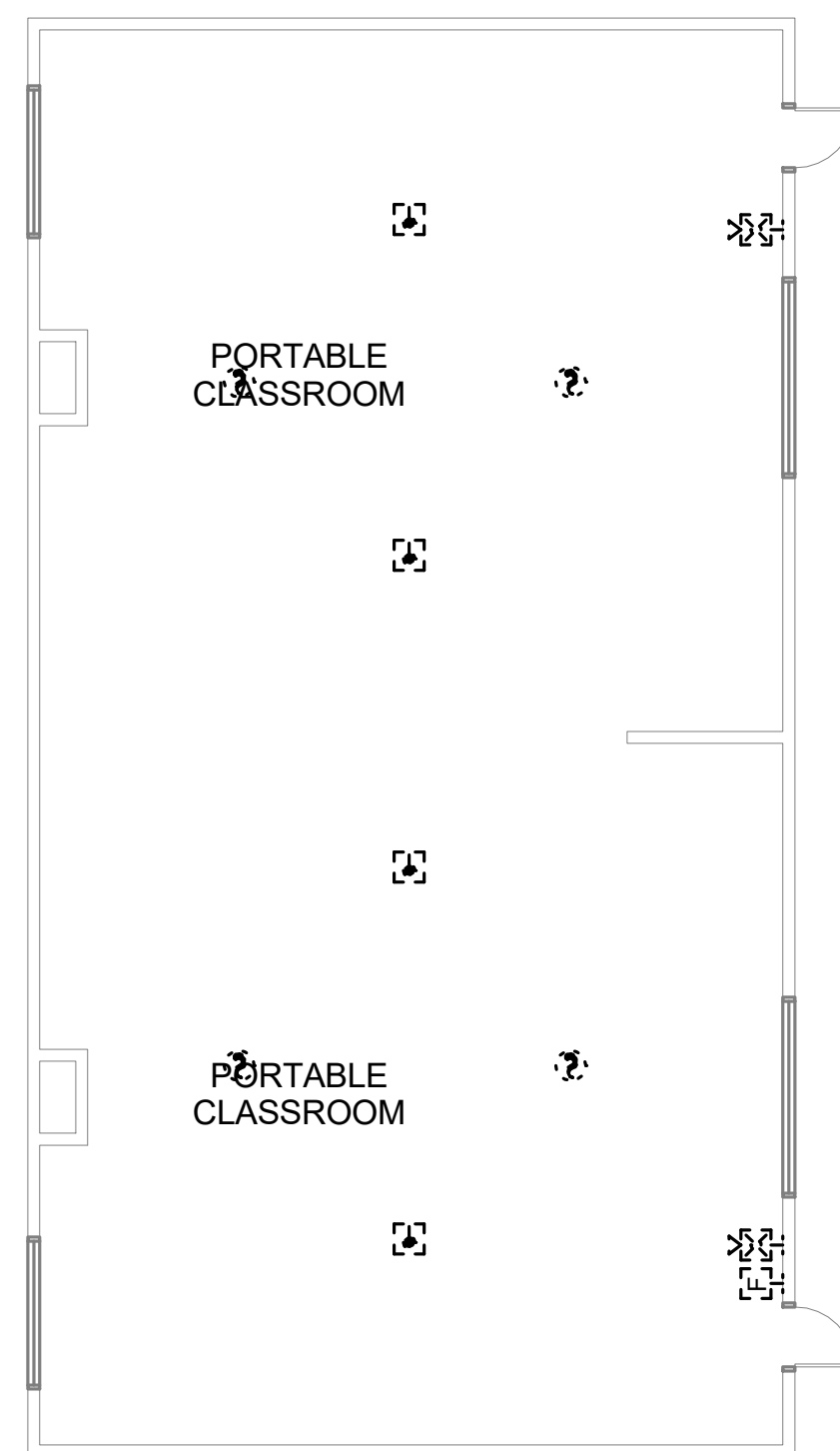
3 FIRE ALARM PLAN - UNIT F  
SCALE: 1/8" = 1'-0"



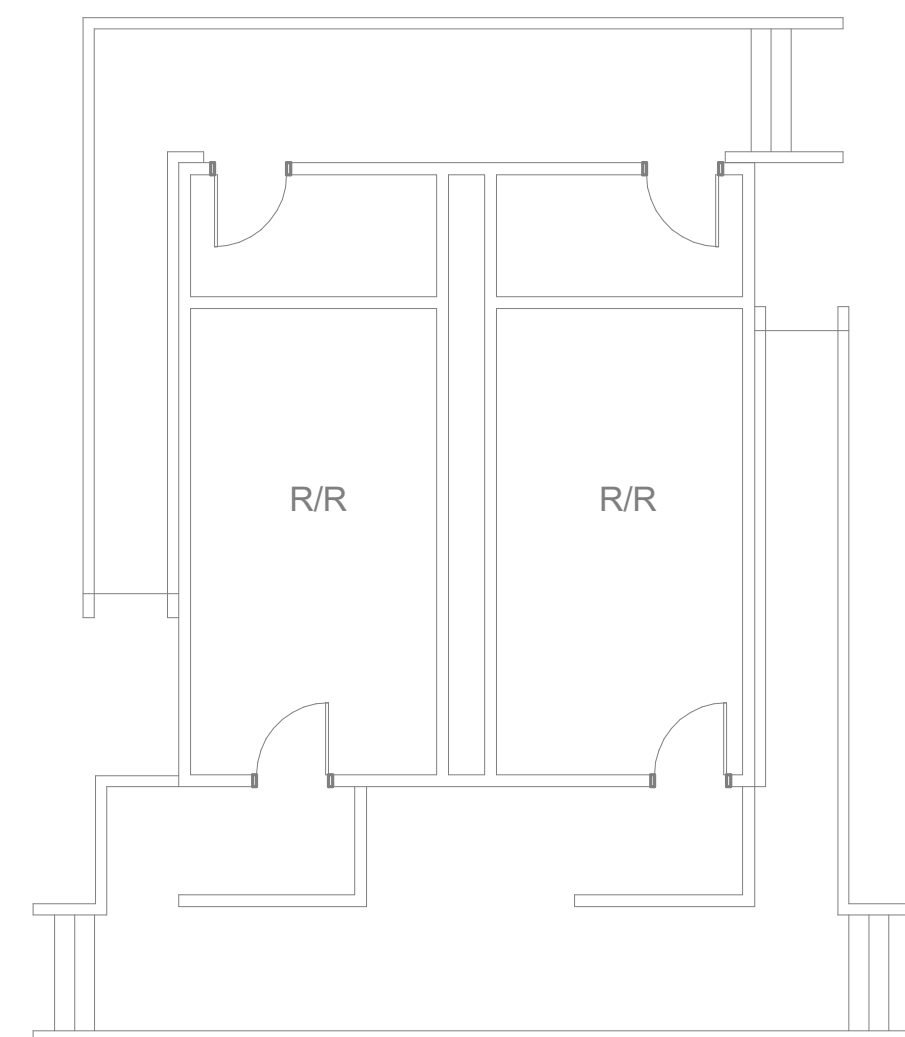
4 FIRE ALARM PLAN - UNIT G  
SCALE: 1/8" = 1'-0"



5 FIRE ALARM PLAN - UNIT H  
SCALE: 1/8" = 1'-0"



6 FIRE ALARM PLAN - UNIT I  
SCALE: 1/8" = 1'-0"



7 FIRE ALARM PLAN - UNIT J  
SCALE: 1/8" = 1'-0"

## GENERAL SHEET NOTES

- A. TO REMOVE ALL UNUSED DEVICES, CIRCUITRY AND 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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**BECKMAN ELEMENTARY SCHOOL  
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95240**

### REVISIONS

#	DESCRIPTION	DATE

### DESIGNER:

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

DATE: 2020.08.19

### TITLE:

**FIRE ALARM  
DEMO PLAN - UNIT  
D, E, F, G, H, I & J**

### DRAWING NO.

**DFA1.01**





<b>DESIGNER:</b>
<b>SCALE:</b> 1/8" = 1'-0"
<b>DATE:</b> 2020.08.19
<b>TITLE:</b>  <b>FIRE ALARM DEMO PLAN - UNIT F26-F30</b>
<b>DRAWING NO.</b>  <b>DFA1.02</b>