IF THIS SHEET IS NOT 30"x42", IT IS A REDUCED PRINT - SCALE ACCORDINGLY

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# MURRIETA VALLEY UNIFIED SCHOOL DISTRICT

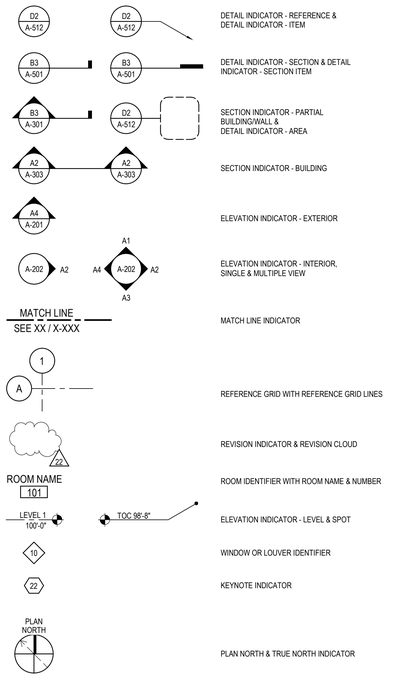
## ALTA MURRIETA ELEMENTARY SCHOOL

39475 WHITEWOOD RD.
MURRIETA, CA 92563

# MVUSD ALTA MURRIETA FA MOD

DSA BACK CHECK DECEMBER 11, 2025

## ARCHITECTURAL SYMBOLS LEGEND




DETAIL INDICATOR - REFERENCE & DETAIL INDICATOR - ITEM

DETAIL INDICATOR - SECTION & DETAIL INDICATOR - SECTION ITEM

SECTION INDICATOR - PARTIAL BUILDING/WALL & DETAIL INDICATOR - AREA

SECTION INDICATOR - BUILDING

ELEVATION INDICATOR - EXTERIOR

ELEVATION INDICATOR - INTERIOR, SINGLE & MULTIPLE VIEW

MATCH LINE INDICATOR

REFERENCE GRID WITH REFERENCE GRID LINES

REVISION INDICATOR & REVISION CLOUD

ROOM IDENTIFIER WITH ROOM NAME & NUMBER

ELEVATION INDICATOR - LEVEL & SPOT

WINDOW OR LOUVER IDENTIFIER

KEYNOTE INDICATOR

PLAN NORTH & TRUE NORTH INDICATOR

## LIST OF ARCHITECTURAL ABBREVIATIONS

| | |
|---|---|
| | SEE UNITED STATES NATIONAL CAD STANDARD FOR ANY ABBREVIATIONS NOT LISTED BELOW. |
| & | AND |
| @ | AT |
| (E) | EXISTING |
| ' | FOOT, FEET |
| " | INCH(ES) |
| # | NUMBER |
| ALUM | ALUMINUM |
| ARCH | ARCHITECTURAL |
| A/C UNIT | AIR CONDITIONING UNIT |
| A/E | ARCHITECT / ENGINEER |
| AB | ANCHOR BOLT |
| AC | ASPHALTIC CONCRETE |
| ACC | ACCESSIBLE |
| ACS DR | ACCESS DOOR |
| ACS PNL | ACCESS PANEL |
| ACST | ACOUSTIC |
| AD | AREA DRAIN |
| ADC | AUTOMATIC DOOR CLOSER |
| ADO | AUTOMATIC DOOR OPERATOR |
| ADDL | ADDITIONAL |
| ADJ SHV | ADJUSTABLE SHELVING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AGGR | AGGREGATE |
| AHU | AIR HANDLING UNIT |
| ASSY | ASSEMBLY |
| BD | BOARD |
| BKG | BACKING |
| BLDG | BUILDING |
| BM | BEAM |
| BM | BENCHMARK |
| BOT | BOTTOM |
| BTWN | BETWEEN |
| BUR | BUILT-UP ROOFING |
| BW | BOTH WAYS |
| C | CHANNEL |
| CAB | CABINET |
| CB | CATCH BASIN |
| CBC | CALIFORNIA BUILDING CODE |
| CEM | CEMENT |
| CEM PLAS | CEM PLASTER |
| CFLG | COUNTERFLASHING |
| CFMF | COLD-FORMED METAL FRAMING |
| CG | CORNER GUARD |
| CI | CAST IRON |
| CJ | CONSTRUCTION JOINT / CONTROL JOINT |
| CL | CENTER LINE |
| CLG | CEILING |
| CLR | CLEAR |
| CMU | CONCRETE MASONRY UNIT |
| CNTR | COUNTER |
| CO | CLEANOUT |
| COL | COLUMN |
| CONC | CONCRETE |
| CONSTR | CONSTRUCTION |
| CONT | CONTINUE / CONTINUOUS |
| COTG | CLEANOUT TO GRADE |
| CP | CONTROL PANEL |
| CPT | CARPET |
| CRS | COLD ROLLED STEEL |
| CSK | COUNTER SUNK |
| CSWK | CASEWORK |
| CT | CERAMIC TILE |
| CTR | CENTER |
| DBL | DOUBLE |
| DEPT | DEPARTMENT |
| DET | DETAIL |
| DF | DRINKING FOUNTAIN |
| DHM | DETENTION HOLLOW METAL |
| DIA | DIAMETER |
| DIM | DIMENSION |
| DS | DOWNSPOUT |
| DSP | DRY STANDPIPE |
| DWG | DRAWING |
| DWR | DRAWER |
| EA | EACH |
| EGSB | EXTERIOR GYPSUM SHEATHING BOARD |
| EIFS | EXTERIOR INSULATION AND FINISH SYSTEM |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC | ELECTRIC / ELECTRICAL |
| ELEV | ELEVATOR |
| EMER | EMERGENCY |
| ENCL | ENCLOSURE |
| EPB | ELECTRICAL PANEL BOARD |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| EW | EACH WAY |
| EWC | ELECTRIC WATER COOLER |
| EXH | EXHAUST |
| EXST | EXISTING |
| EXP | EXPANSION |
| EXT | EXTERIOR |
| FA | FIRE ALARM |
| FB | FLAT BAR |
| FD | FLOOR DRAIN |
| FDTN | FOUNDATION |
| FE | FIRE EXTINGUISHER |
| FEC | FIRE EXTINGUISHER CABINET |
| FIN | FINISH |
| FLG | FLOORING |
| FLL | FLOW LINE |
| FLR | FLOOR |
| FOC | FACE OF CONCRETE/CURB |
| FOF | FACE OF FINISH |
| FOM | FACE OF MASONRY |
| FOS | FACE OF STUD |
| FOW | FACE OF WALL |
| FP | FIREPROOF |
| FRP | FIBERGLASS REINFORCED PLASTIC |
| FT | FEET / FOOT |
| FTG | FOOTING |
| FURRG | FURRING |
| FUT | FUTURE |
| G | GROUND; NATURAL GAS |
| GA | GAGE |
| GALV | GALVANIZED |
| GB | GRAB BAR |
| GI | GALVANIZED IRON |
| GLU LAM | GLUED LAMINATED WOOD |
| GYP | GYPSUM |
| HB | HOSE BIB |
| HC | HOLLOW CORE |
| HDBD | HARDBOARD |
| HDW | HARDWARE |
| HDWD | HARDWOOD |
| HM | HOLLOW METAL |
| HORIZ | HORIZONTAL |
| HR | HOUR |
| HT | HEIGHT |
| ID | INSIDE DIAMETER |
| INSUL | INSULATION |
| INT | INTERIOR |
| JAN | JANITOR |
| KIT | KITCHEN |
| L | ANGLE |
| LAB | LABORATORY |
| LAV | LAVATORY |
| MATL | MATERIAL |
| MAX | MAXIMUM |
| MECH | MECHANICAL |
| MEMB | MEMBRANE |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MIN | MINIMUM |
| MISC | MISCELLANEOUS |
| MO | MASONRY OPENING |
| MR | MOISTURE RESISTANT |
| MTD | MOUNTED |
| MTL | METAL |
| MULL | MULLION |
| NIC | NOT IN CONTRACT |
| NO | NUMBER |
| NOM | NOMINAL |
| NTS | NOT TO SCALE |
| O/ | OVER |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OF/CI | OWNER FURNISHED / CONTRACTOR INSTALLED |
| OFF | OFFICE |
| OGL | OBSCURE GLASS |
| OPH | OPPOSITE HAND |
| OPNG | OPENING |
| OPP | OPPOSITE |
| PAF | POWER ACTUATED FASTENER |
| PL | PROPERTY LINE; PLATE |
| PLAM | PLASTIC LAMINATE |
| PLB | PLUMB |
| PLBG | PLUMBING |
| PLYWD | PLYWOOD |
| PNL | PANEL |
| PROP | PROPERTY |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PT | PAINT; PAINT |
| PTN | PARTITION |
| PV | PHOTOVOLTAIC |
| QT | QUARRY TILE |
| R | RADIUS; RISER |
| RD | ROOF DRAIN |
| REBAR | REINFORCING STEEL BAR |
| REF | REFERENCE |
| REF | REFRIGERATOR |
| REINF | REINFORCE / REINFORCING |
| REQD | REQUIRED |
| RESIL | RESILIENT |
| RM | ROOM |
| RO | ROUGH OPENING |
| RWD | REDWOOD |
| RWL | RAIN WATER LEADER |
| SAD | SEE ARCHITECTURAL DRAWINGS |
| SATC | SUSPENDED ACOUSTICAL TILE CEILING |
| SB | SPLASH BLOCK |
| SC | SOLID CORE |
| SCHED | SCHEDULE |
| SD | STORM DRAIN |
| SDST | SELF DRIVING, SELF TAPPING |
| SHT | SHEET |
| SHTHG | SHEATHING |
| SHV | SHELVING |
| SIM | SIMILAR |
| SLNT | SEALANT |
| SM | SHEET METAL |
| SPEC | SPECIFICATION |
| SQ | SQUARE |
| SS | SANITARY SEWER; SERVICE SINK |
| SST | STAINLESS STEEL |
| STD | STANDARD |
| STL | STEEL |
| STOR | STORAGE |
| STRUCT | STRUCTURAL |
| SUSP CLG | SUSPENDED CEILING |
| SV | SHEET VINYL |
| SYMM | SYMMETRICAL |
| SYS | SYSTEM |
| T | TREAD |
| T&G | TONGUE & GROOVE |
| TEL | TELEPHONE |
| THK | THICKNESS |
| TMH | TOP OF MANHOLE |
| TMPD | TEMPERED |
| TO | TOP OF |
| TOC | TOP OF CURB |
| TOF | TOP OF FRAME |
| TOJ | TOP OF JOIST |
| TOM | TOP OF MASONRY |
| TOP | TOP OF PARAPET |
| TOPO | TOPOGRAPHY |
| TOS | TOP OF STEEL |
| TOW | TOP OF WALL |
| TV | TELEVISION |
| TYP | TYPICAL |
| UC | UNDER COUNTER/CABINET |
| UNO | UNLESS NOTED OTHERWISE |
| UON | UNLESS OTHERWISE NOTED |
| UR | URINAL |
| VCT | VINYL COMPOSITION TILE |
| VERT | VERTICAL |
| VEST | VESTIBULE |
| VIF | VERIFY IN FIELD |
| VWC | VINYL WALL COVERING |
| VWF | VINYL WALL FABRIC |
| W/ | WITH |
| W/O | WITHOUT |
| WC | WATER CLOSET |
| WD | WOOD |
| WH | WATER HEATER |
| WO | WHERE OCCURS |
| WP | WORKING POINT |
| WPM | WATERPROOF MEMBRANE |
| WSCT | WAINSCOT |
| WT | WEIGHT |
| WTR | WATER |
| WWR | WELDED WIRE REINFORCEMENT |

## GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES ETC. PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL NOTIFY ARCHITECT WHERE CONFLICT OCCURS ON ANY OF THE CONTRACT DRAWINGS OR DOCUMENTS. CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE BUILDING THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED WITH THE AFFECTED PARTIES.WHERE REQUIRED, ROOM OCCUPANCY CAPACITIES SHALL BE POSTED WITH THE REQUIREMENTS OF CALIFORNIA STATE FIRE MARSHAL & CBC 1004.3.
3. CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND REGULATIONS, INCLUDING BUT NOT LIMITED TO:

   LIST OF APPLICABLE CODES
   2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR
   2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
   2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 CCR
   2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR
   2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
   2022 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 CCR
   2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
   2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
   2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 CCR
   2022 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR
   TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

   APPLICABLE STANDARDS
   FOR A LIST OF APPLICABLE STANDARDS, INCLUDING CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS, REFER TO CBC CHAPTER 35 AND CFC CHAPTER 80.
4. CHANGES TO THE APPROVED DRAWINGS OR SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENTS (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY THE SECTION 4-338 OF CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 1 (CAC 4-338) SUBSTITUTIONS OF PRODUCTS OR PROCESSES WHICH AFFECT STRUCTURAL SAFETY, FIRE AND LIFE-SAFETY, OR ACCESSIBILITY SHALL BE SUBMITTED AS AN ADDDENDUM OR CONSTRUCTION CHANGE DOCUMENT TO DSA FOR REVIEW AND APPROVAL.
5. A DSA CERTIFIED CLASS 3 PROJECT INSPECTOR EMPLOYED BY THE DISTRICT AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.
6. CONSTRUCTION AND DEMOLITION SHALL CONFORM TO 2021 CFC, CHAPTER 33.
7. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
8. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK (SECTION 4-317(C), PART 1, TITLE 24, CCR)
9. THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.
10. ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TESTS SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINEER/ARCHITECT OF RECORD OR THE OWNER'S AGENT. A LISTING OF CERTIFIED ATT CAN BE FOUND AT: HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER PROGRAM/ACCEPTANCE.
11. THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.
12. PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.
13. LIONAKIS WILL NOT PROVIDE ANY INFORMATION CONCERNING HAZARDOUS MATERIAL. CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR HAZARDOUS MATERIAL SCOPE AND REQUIREMENTS.
14. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).

## STATEMENT OF GENERAL CONFORMANCE

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS

INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

APPLICATION NO: 04-124843 FILE NO: 36-23

[X] THE DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX SHEET
[ ] THIS DRAWING, PAGE OF SPECIFICATIONS/CALCULATION

HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1. DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND
2. COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES, AND RESPONSIBILITIES UNDER SECTION 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344" OF TITLE 24, PART 1. *(TITLE 24, PART 1, SECTION 4-317 (B))*

I FIND THAT: [X] THE DRAWINGS OR SHEETS LISTED ON THE COVER OR SHEET INDEX
[ ] THIS DRAWING, PAGE OF SPECIFICATIONS/CALCUATION

| | |
|---|---|
| [X] IS/ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN, AND | [ ] IS/ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN, AND |
| [X] HAS/HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS. | [ ] HAS/HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS. |
| SIGNATURE 12/08/2025 DATE | SIGNATURE DATE |
| ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE | ARCHITECT OR ENGINEER DELEGATED REPSONSBILITY FOR THIS PORTION OF THE WORK |
| ANTHONY PACHECO-TAYLOR PRINT NAME | PRINT NAME |
| C-354622 06-30-2027 LICENSE NUMBER EXPIRATION DATE | LICENSE NUMBER EXPIRATION DATE |

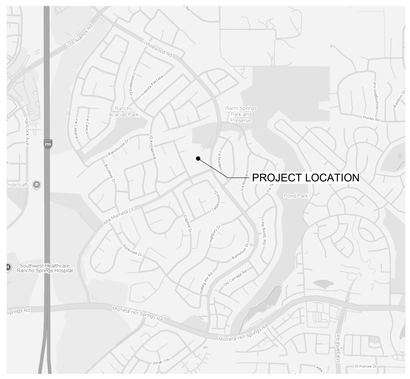
## SCOPE OF PROJECT

CAMPUS WIDE FIRE ALARM SYSTEM UPGRADE.

## DEFERRED SUBMITTALS

NONE

## LOCATION MAP




## VICINITY MAP


PROJECT LOCATION
Whitewood Rd
Via Montezuma
Via Montezuma
Via Montezuma
Via Montezuma
Alta Murrieta Dr
Alta Murrieta Dr
Alta Murrieta Dr
Alta Murrieta Dr
Alta Murrieta Dr
Orchardwood Dr
Orchardwood Dr
Orchardwood

## SCOPE OF WORK

THE SCOPE OF WORK CONSISTS OF SAFE REMOVAL, DEMOLITION, AND REPLACEMENT OF THE EXISTING FIRE ALARM SYSTEM THROUGHTOUT THE SCHOOL CAMPUS. WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING.

1. DEMOLITION / REMOVAL:
   - A. DISCONNECTION, REMOVE, AND PROPERLY DISPOSE OF ALL EXISTING FIRE ALARM SYSTEM COMPONENTS INCLUDING CONTROL PANELS, INITIATING DEVICES, NOTIFICATION APPLIANCES, WIRING, AND ASSOCIATED HARDWARE AS REQUIRED. EXISTING CONDUITS TO REMAIN AND REUSE FOR NEW FIRE ALARM DEVICES.
   - B. CAP AND MAKE SAFE ANY ABANDONED CONDUIT OR WIRING NOT REUSED.
   - C. ENSURE ALL DEMOLITION ACTIVITIES COMPLY WITH NFPA 72, LOCAL FIRE CODE, AND SCHOOL DISTRICT REQUIREMENTS.
   - D. MAINTAIN TEMPORARY FIRE WATCH OR INTERIM PROTECTION AS DIRECTED DURING PERIODS WHEN THE FIRE ALARM SYSTEM IS OFFLINE.
   - E. ALL PENETRATIONS LEFT BY REMOVED DEVICES AND APPLIANCES SHALL BE PATCHED TO MAINTAIN THE INTEGRITY OF FIRE RATED ASSEMBLIES.
   - F. PROVIDE BLANK COVER PLATE FOR ALL DEVICES REMOVED AND LOCATION NOT BEING REUSE.
2. INSTALLATION / UPGRADE:
   - A. PROVIDE AND INSTALL A NEW FULL CODE–COMPLIANT FIRE ALARM SYSTEM INCLUDING A MAIN FIRE ALARM CONTROL PANEL, ANNUNCIATOR PANELS, DETECTORS, PULL STATIONS, NOTIFICATION APPLIANCES, AND RELATED ACCESSORIES.
   - B. INSTALL NEW CONDUIT AND CABLING WHERE REQUIRED FOR THE UPGRADE SYSTEM.
   - C. INTEGRATE THE SYSTEM WITH EXISTING LIFE SAFETY AND MONITORING SYSTEMS AS NECESSARY.
   - D. PROVIDE TESTING, PROGRAMMING, AND CERTIFICATION OF THE NEW SYSTEM IN ACCORDANCE WITH NFPA AND LOCAL AHJ (AUTHORITY HAVING JURISDICTION) REQUIREMENTS.
3. COORDINATION:
   - A. COORDINATE WORK ACTIVITIES WITH SCHOOL ADMINISTRATION TO MINIMIZE DISRUPTION TO ONGOING OPERATIONS.
   - B. PROVIDE PHASING PLAN AS REQUIRED TO MAINTAIN CAMPUS SAFETY DURING CONSTRUCTION.
   - C. WORKING TO BE PERFORMED AND COORDINATE WITH SCHOOL DISTRICT FOR AFTER SCHOOL HOURS, ON WEEKENDS,OR DURING SCHOOL BREAKS WHERE FEASIBLE.
4. FINAL ACCEPTANCE.
   - A. CONDUIT FULL SYSTEM TESTING IN PRESENCE OF (AHJ) AND SCHOOL REPRESENTATIVES.
   - B. PROVIDE RECORD DRAWINGS, O&M MANUALS, AND TRAINING FOR SCHOOL STAFF.
   - C. DELIVER COMPLETE CLOSEOUT DOCUMENTATION INCLUDING TEST REPORTS AND WARRANTY INFORMATION.
5. ADDITIONAL SCOPE NOTES:
   - A. PROVIDE SHOP DRAWINGS AND DOCUMENTATION FOR REVIEW AND APPROVAL PRIOR TO START OF WORK.
   - B. DEMOLISH AND SAVAGE THE SELECTED EXISTING FIRE ALARM REMOTE POWER SUPPLIES, FIRE ALARM AND ASSOCIATED DEVICES WIRING, EXISTING CONDUITS TO REMAIN.
   - C. REPAIR OR PATCH ALL HOLES CREATED BY THE INSTALLATION OF THE NEW SYSTEM OF REMOVAL OF EXISTING EQUIPMENT. PAINT REPAIRS TO MATCH EXISTING CONDITIONS. RESTORE FIRE RESISTIVE RATING WHERE REQUIRED.
   - D. CONTRACTOR SHALL PROVIDE AND INSTALL ACCESS PANELS IN NON–ACCESSIBLE CEILINGS WHERE REQUIRED TO ACCESS EQUIPMENT IN CEILING SPACE. ACCESS DOORS SHALL HAVE FIRE RATING EQUAL TO THE CEILING ASSEMBLY IN WHICH THEY ARE INSTALLED.
   - E. CONTRACTOR SHALL PROVIDE FIRE WATCH AT CAMPUS, OR AFFECTED PORTION OF THE CAMPUS PER DSA IR F–2.

## GENERAL NOTES

1. APPLICABLE STANDARD 2022 NFPA 72
2. INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTS AND SPECIFICATION INCLUDING STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM HAS BEEN APPROVED BY DSA.
3. UPON COMPLETION OF THE SYSTEM 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 THE PROJECT.
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 WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER LAB TESTING CRITERIA APPROVED TYPE OF MATERIALS SHALL BE IDENTIFIED WITHIN THE SPECIFICATION WITHIN THE FIRE ALARM SECTION.
8. WALL MOUNTED VISUAL NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80"MINIMUM AND 100" MAXIMUM FROM FINISHED FLOOR AND NO CLOSER THAN 6"TO A HORIZONTAL STRUCTURE.
9. AUDIBLE DEVICES TO BE AT LEAST 15 DBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL BUT NOT LESS THAN 75 DBA AT 10 FEET OR MORE THAN 110 DBA AT THE MINIM HEARING DISTANCE. SOUND LEVEL SHALL BE MAINTAINED FOR DURATION OF AT LEAST 60 SECONDS, 5 DBA MUST BE MAINTAINED.
10. AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.
11. THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
12. VISUAL DEVICES SHOULD NOT EXCEED 2 FLASHES PER SECOND AND NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELA. VISUAL DEVICES WITHIN 55 FROM EACH OTHER SHALL BE SYNCHRONIZED.
13. UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATERTIGHT FITTINGS AND WIRE TO BE APPROVAL FOR WET LOCATIONS.
14. ALL FIRE ALARM WIRING SHALL BE FLP OR FPLP (FIRE POWER LIMITED OR FIRE POSER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE THHN OR THWN.
15. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTION DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. THERE MUST BE AT LEAST 6'OF LEAD WIRE FROM THE BOX TO THE DEVICE. ALL BOXES TO BE SIZED PER CEC.
16. SMOKE DETECTORS SHALL NOT BE CLOSER THAN 3 FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEW,Y INSTALLED FIRE ALARM DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
17. ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE CEILINGS, UNDER FLOORS AND IN WALLS IN NEAT AND PROTECTED MANOR AS INDICATED ON DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
18. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICES SHALL EXCEED THE WEIGHT OF 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS
19. A DEDICATED BRANCH CIRCUIT SHALL BE PROVIDED FOR FIRE ALARM EQUIPMENT. THIS CIRCUIT SHALL BE ENERGIZED FROM THE COMMON USE AREA PANEL AND SHALL HAVE NO 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/EXTENDERS.
20. THE INSTALLING CONTRACTOR SHALL PROVIDE A RECORD OF COMPLETION PER NFPA 72, FIGURE 10.18.2.1.1.
21. CONTROL PANELS, REMOTE ANNUNCIATOR SHALL BE INSTALLED WITH THEIR BOTTOMS MOUNTED AT 48"
22. THE INSTALL CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
23. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
24. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.

## FIRE ALARM GENERAL NOTES

1. THE FIRE ALARM SHALL CONFORM TO ARTICLE 760 OF THE CALIFORNIA ELECTRICAL CODE.
2. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE AUTHORITY HAVING JURISDICTION (FIRE MARSHAL). THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TEST EQUIPMENT (e.g. DIGITAL AMMETER, DECIBEL METER) AND VERIFY THAT THE GROUND FAULT DETECTION FOR THE FIRE ALARM SYSTEM IS OPERATIONAL DURING TESTING AND REMAINS SO ONCE THE SYSTEM IS APPROVED. UPON APPROVAL OF THE FIRE ALARM SYSTEM, THE CONTRACTOR SHALL PROVIDE THE OWNER WITH COMPLETE SET OF OPERATING INSTRUCTIONS FOR THE SYSTEM.
3. A MINIMUM OF 48 HOURS NOTICE SHALL BE REQUIRED PRIOR TO ANY INSPECTION AND/OR TEST.
4. AN APPROVED, STAMPED SET OF THE FIRE ALARM PLANS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION. ANY DEVIATIONS FROM THE APPROVED PLANS, INCLUDING SUBSTITUTION OF DEVICES, SHALL BE APPROVED BY THE FIRE MARSHAL.
5. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF THE INSPECTOR OF RECORD.
6. ALL DEVICES OF THE FIRE ALARM SYSTEM SHALL BE APPROVED AND LISTED BY THE CALIFORNIA STATE FIRE MARSHAL.
7. A "RECORD OF COMPLETION" SHALL BE PREPARED BY THE INSTALLER AND GIVEN TO THE FIRE MARSHAL UPON COMPLETION OF THE INSTALLATION.
8. ALL TERMINAL CABINETS AND JUNCTION BOXES SHALL BE CLEARLY MARKED THAT THE ENCLOSURE IS PART OF THE FIRE ALARM SYSTEM.
9. THE CONTRACTOR SHALL LOCATE ALL SMOKE DETECTION DEVICES A MINIMUM OF 36" FROM ANY MECHANICAL REGISTERS.
10. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE. WIRE LENGTHS USED TO CALCULATE VOLTAGE DROPS REPRESENT ESTIMATES BASED ON MEASUREMENTS OF SCALED FLOOR PLAN DRAWINGS. CONTRACTOR TO ROUTE CONDUIT AS FIELD CONDITIONS REQUIRE. CONTRACTOR TO INSTALL ALL DEVICES ACCORDING TO MANUFACTURERS INSTRUCTIONS AND IN COMPLIANCE WITH ALL APPLICABLE CODES.

## FIRE ALARM DEVICE LEGEND

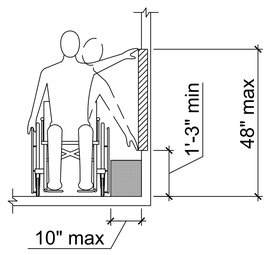
| SYMBOL | DESCRIPTION | MOUNTING/BACKBOX/RING |
|---|---|---|
| DCB | DOCUMENT BOX<br>MANUFACTURER: SPACE AGE<br>MODEL: SSU00685 | SPECIAL BACKBOX SUPPLIED BY FIRE ALARM CONTRACTOR |
| FACP | FIRE ALARM/VOICE EVAC CONTROL PANEL<br>MANUFACTURER: NOTIFIER<br>MODEL: NFS2–3030<br>CSFM #: 7165–0028:0224 | INSIDE FACP CABINET:<br>CHS–M3<br>AMPS–24<br>LCM–320<br>CMIC–1<br>UDACT–2<br>UDACT–2<br>RJ31X<br>RJ31X–7<br>DVC–EM<br>DVC–KD<br>DS–FM<br>SBB–D4 |
| ANN | REMOTE ANNUNCIATOR<br>MANUFACTURER: NOTIFIER<br>MODEL: LCD–160 WITH<br>ABS–2D BACKBOX<br>CSFM #: 7120–0028:0227 | SPECIAL BACKBOX SUPPLIED BY FIRE ALARM CONTRACTOR<br>FLUSH MOUNTED<br>MTD. @ 60" TO TOP<br>A SIZE CABINET 9.938"H X 4.625"W X 2.5"D, E3BB–BBA |
| RM–1 | REMOTE MIC EVACUATION<br>MANUFACTURER: NOTIFIER<br>MODEL: RM–1<br>CSFM #: 7165–1703:0125 | SPECIAL BACKBOX SUPPLIED BY FIRE ALARM CONTRACTOR<br>FLUSH MOUNTED<br>MTD. @ 60" TO TOP<br>A SIZE CABINET 10"H X 19.22"W X 3"D, E3BB–BBA |
| F | PULL STATION<br>MODEL: NOTIFIER NBG–12LX<br>C.S.F.M. 7150–0028:199 | 4 SQUARE DEEP BOX WITH<br>TWO GANG RING |
| RPS | NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLY<br>MANUFACTURER: NOTIFIER<br>MODEL: PSE–10<br>CSFM #: 7315–0028: 0513<br><br>POWERSONIC BATTERY<br>PS12120 – BOOSTER BATTERIES AND EVAC PANEL<br>12vdc, 12Ah | SPECIAL BACKBOX SUPPLIED BY FIRE ALARM CONTRACTOR<br>MTD. @ 72" TO TOP (TYPICAL)<br>15"H X 14.25"W X 2.75"D |
| M | ADDRESSABLE MONITORING MODULE<br>MANUFACTURER: NOTIFIER<br>MODEL: FMM–1<br>CSFM #: 7300–0028: 0219 | 4 SQUARE DEEP BOX WITH NO RING |
| | ADDRESSABLE SMOKE DETECTOR<br>MANUFACTURER: NOTIFIER<br>MODEL: FSP–951<br>WITH B300–6 (BASE)<br>SMOKE CSFM #: 7272–0028: 0503<br>BASE CSFM #: 7300–1653: 0109 | 4 SQUARE DEEP BOX WITH 3–0 RING<br>MOUNT 3' AWAY FROM ANY AIR MOVEMENT SYSTEMS |
| CO | ADDRESSABLE FIRE/CO DETECTOR<br>MANUFACTURER: NOTIFIER<br>MODEL: FCO–951<br>WITH B200S (BASE)<br>SMOKE CSFM #: 7272–0028: 0510<br>BASE CSFM #: 7300–1653: 0109 | 4 SQUARE DEEP BOX WITH 3–0 RING<br>MOUNT 3' AWAY FROM ANY AIR MOVEMENT SYSTEMS |
| HD | RATE OF RISE 135° HEAT DETECTOR<br>MANUFACTURER: NOTIFIER<br>MODEL: FST–951<br>WITH B300–6 (BASE)<br>HEAT CSFM #: 7270–0028: 0502<br>BASE CSFM #: 7300–1653: 0109 | 4 SQUARE DEEP BOX WITH 3–0 RING<br>INSTALL ABOVE CEILING SPACE. |
| R | CONTROL RELAY MODULE<br>MANUFACTURER: NOTIFIER<br>MODEL: FCM<br>CSFM #: 7300–0028: 0249 | 1.5"H X 1.20"W X .90"D |
| | SPEAKER/STROBE<br>WALL MOUNTED<br>MANUFACTURER: SYSTEM SENSOR<br>MODEL: SPSWL–CLR–ALERT<br>CSFM #: 7320–1653: 0201 | 4 SQUARE DEEP BOX WITH EXTENSION<br>TAP SPEAKER AT 1/2 MIN. WATT U.O.N |
| | SPEAKER/STROBE<br>CEILING MOUNTED<br>MANUFACTURER: SYSTEM SENSOR<br>MODEL: SPSCWLED–CLR–ALERT<br>CSFM #: 7320–1653: 201 | 4 SQUARE DEEP BOX WITH EXTENSION<br>TAP SPEAKER AT 1/2 WATT MIN. U.O.N. |
| WP SFR | WALL MOUNTED EXTERIOR SPEAKER<br>WEATHER RESISTANT<br>MANUFACTURER: SYSTEM SENSOR<br>MODEL: SPRK<br>CSFM #: 7320–1653: 0201 | FLUSH MOUNT: 4 SQUARE DEEP BOX WITH EXTENSION<br>SURFACE MOUNT: WBB–R WEATHER PROOF BACKBOX<br>TAP SPEAKER AT 2 WATT U.O.N. |
| FATC | FIRE ALARM TERMINAL CABINET | SURFACE MOUNT CABINET |
| EVAC | NOTIFIER:<br>DAA2–5070 50W 70 AMPLIFIER<br>CSFM# 7165–0028: 0224<br><br>CHS–BH1 – AMPLIFIER BATTERY RACK<br><br>DS–SFM – FIBER MODULE<br>CSFM# 7165–0028: 0243<br><br>EQUBB–B4 – BACKBOX/DOOR<br><br>EQDR–B4 – BACKBOX/DOOR | DIGITAL AUDIO AMPLIFIER CABINET ASSEMBLY. SURFACE MOUNT +60" AFF.<br><br>6 STRANDS MULTI–MODE FIBER |
| LEM | LOOP CONTROL MODULE<br>MANUFACTURER: NOTIFIER<br>MODEL: LEM320<br>CSFM #: 7165–0028: 0224 | WITHIN THE CABINET CPU<br>PROVIDE ADDITIONAL AS NEEDED |
| B | 120V SPRINKLER BELL (EXISTING) | MONITORING BY FIRE ALARM CONTRACTOR |
| FATC | FIRE ALARM TERMINAL CABINET | TERMINATION CABINET FOR CABLINGS |
| FS | FLOW SWITCH MONITORED BY ADDRESSABLE MONITOR MODULE EXISTING TO REMAIN. | EXISTING FLOW SWITCH. |
| TS | TAMPER SWITCH MONITORED BY ADDRESSABLE MONITOR MODULE EXISTING TO REMAIN. | EXISTING TAMPER SWITCH. |

15cd – REPRESENTS CANDELA INTENSITY
CX – REPRESENTS NAC CIRCUIT NUMBER AND REPRESENTS SPEAKER CIRCUIT NUMBER

L1 – REPRESENTS SLC NUMBER

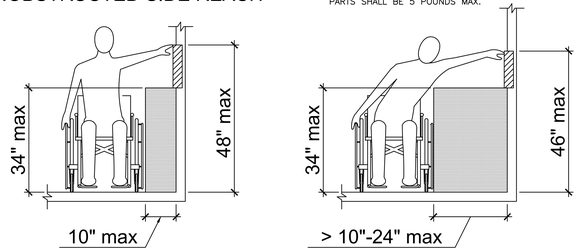
NOTE:
NOT ALL COMPONENTS USED FOR THE VOICE EVAC PANEL ARE SHOWN. QUANTITIES FOR BIDDING PURPOSE ONLY.

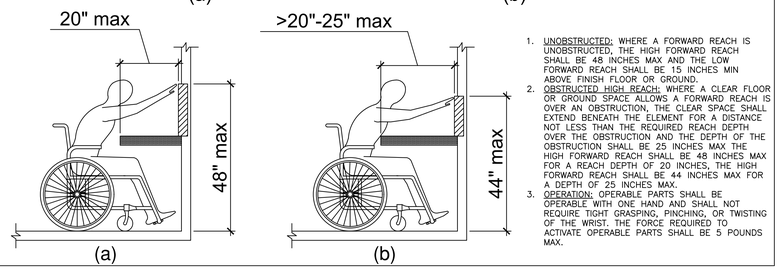
## ACCESSIBLE MOUNTING DETAIL




UNOBSTRUCTED SIDE REACH

1. UNOBSTRUCTED: WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE SIDE REACH IS UNOBSTRUCTED, THE HIGH SIDE REACH SHALL BE 48 INCHES MAX AND THE LOW SIDE REACH SHALL BE 15 INCHES MIN ABOVE FINIS FLOOR OR GROUND.
   - A. EXCEPTION: AN OBSTRUCTION SHALL BE PERMITTED BETWEEN THE CLEAR FLOOR OR GROUND SPACE AND THE ELEMENT WHERE THE DEPTH OF THE OBSTRUCTION IS 10 INCHES MAX.
2. OBSTRUCTED HIGH REACH: WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE HIGH SIDE REACH IS OVER AND OBSTRUCTION, THE HEIGHT OF THE OBSTRUCTION SHALL BE 34 INCHES MAX AND THE DEPTH OF THE OBSTRUCTION SHALL BE 24 INCHES MAX, THE HIGH SIDE REACH SHALL BE 48 INCHES MAX FOR A REACH DEPTH OF 10 INCHES MAX WHERE THE REACH DEPTH EXCEEDS 10 INCHES, THE HIGH SIDE REACH SHALL BE 46 INCHES MAX FOR A REACH DEPTH OF 24 INCHES MAX.
3. OPERATION: OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5 POUNDS MAX.




1. UNOBSTRUCTED: WHERE A FORWARD REACH IS UNOBSTRUCTED, THE HIGH FORWARD REACH SHALL BE 48 INCHES MAX AND THE LOW FORWARD REACH SHALL BE 15 INCHES MIN ABOVE FINISH FLOOR OR GROUND.
2. OBSTRUCTED HIGH REACH: WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A FORWARD REACH IS OVER AN OBSTRUCTION, THE CLEAR SPACE SHALL EXTEND BENEATH THE ELEMENT FOR A DISTANCE NOT LESS THAN THE REQUIRED REACH DEPTH OVER THE OBSTRUCTION AND THE DEPTH OF THE OBSTRUCTION SHALL BE 25 INCHES MAX THE HIGH FORWARD REACH SHALL BE 48 INCHES MAX FOR A REACH DEPTH OF 20 INCHES, THE HIGH FORWARD REACH SHALL BE 44 INCHES MAX FOR A DEPTH OF 25 INCHES MAX.
3. OPERATION: OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5 POUNDS MAX.

## PARTIAL LIST OF APPLICABLE CODES

- 2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR
- 2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
- 2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 CCR
- 2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR
- 2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
- 2022 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 CCR
- 2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
- 2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
- 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 CCR
- 2022 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24, CCR
- TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHALL REGULATIONS

## PARTIAL LIST OF APPLICABLE STANDARDS

| | | |
|---|---|---|
| NFPA 13 | STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (CA AMENDED) | 2022 EDITION |
| NFPA 14 | STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS | 2022 EDITION |
| NFPA 17 | STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS | 2021 EDITION |
| NFPA 17A | STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS | 2021 EDITION |
| NFPA 20 | STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION | 2022 EDITION |
| NFPA 22 | STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION | 2023 EDITION |
| NFPA 24 | STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES | 2019 EDITION |
| NFPA 72 | NATIONAL FIRE ALARM AND SIGNALING CODE (CA AMENDED) | 2022 EDITION |
| NFPA 80 | STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES | 2022 EDITION |
| NFPA 2001 | STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS | 2022 EDITION |
| UL 300 | STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIP. | 2019 (R2010) |
| UL 464 | AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES | 2019 EDITION |
| UL 521 | STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS | 2019 EDITION |
| UL 1971 | STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED | 2019 EDITION |
| ICC 300 | STANDARD FOR BLEACHERS, FOLDING AND TELESCOPIC SEATING AND GRANDSTANDS | 2017 EDITION |

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.
SEE CALIFORNIA BUILDING CODE, CHAPTER 35, FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.

## FIRE ALARM SEQUENCE OF OPERATIONS MATRIX

### SYSTEM OUTPUTS

CONTROL UNIT ANNUNCIATION | NOTIFICATION | REQUIRED FIRE SAFETY CONTROL

- ACTUATE COMMON ALARM SIGNAL INDICATOR
- ACTUATE AUDIBLE ALARM/SPEAKER SIGNAL
- ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR
- ACTUATE AUDIBLE SUPERVISORY SIGNAL
- ACTUATE COMMON TROUBLE SIGNAL INDICATOR
- ACTUATE AUDIBLE COMMON TROUBLE SIGNAL
- ACTUATE EVACUATION SIGNALS
- DISPLAY CHANGE OF STATUS
- TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION
- TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION
- TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION
- ACTUATE INTELLIGIBLE MESSAGE
- ACTIVATE CO DEVICE & SOUND LOCAL TEMPORAL 4 SOUNDER BASE, SOUND ALARM SIGNAL AT ADMIN OFFICE REMOTE ANNUNCIATOR
- CLOSE SMOKE/FIRE DAMPERS IN RATED WALLS
- SHUT DOWN ALL AIR HANDLING UNIT

### SYSTEM INPUTS

| | | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SMOKE DETECTORS | ● | ● | | | | | ● | ● | ● | | | ● | | ● | ● | 1 |
| 2 | HEAT DETECTORS | ● | ● | | | | | ● | ● | ● | | | ● | | ● | ● | 2 |
| 3 | CARBON MONOXIDES DETECTORS | ● | ● | | | | | | | ● | ● | | | ● | ● | ● | 3 |
| 4 | | | | | | | | | | | | | | | | | 4 |
| 5 | | | | | | | | | | | | | | | | | 5 |
| 6 | DUCT SMOKE DETECTOR – AT SUPPLY FAN | | | ● | ● | | | | ● | | ● | | ● | | ● | ● | 6 |
| 7 | HOOD/FIRE SUPPRESSION SYSTEM ALARM | ● | ● | | | | | ● | ● | ● | | | ● | | ● | ● | 7 |
| 8 | DUCT SMOKE DETECTOR–AT SMOKE FIRE DAMPER | | | ● | ● | | | | ● | | ● | | ● | | ● | ● | 8 |
| 9 | FIRE ALARM AC POWER FAILURE | | | | | ● | ● | | | | | ● | | | | | 9 |
| 10 | FIRE ALARM SYSTEM LOW BATTERY | | | | | ● | ● | | | | | ● | | | | | 10 |
| 11 | OPEN CIRCUIT | | | | | ● | ● | | | | | ● | | | | | 11 |
| 12 | GROUND CIRCUIT | | | | | ● | ● | | | | | ● | | | | | 12 |
| 13 | NOTIFICATION APPLIANCE CIRCUIT SHORT | | | | | ● | ● | | | | | ● | | | | | 13 |
| | | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | |

NOTE:

PROVIDE FIRE ALARM SYSTEM PER CFC 907.6.6.3 SPECIFYING AUTOMATIC FIRE ALARM SYSTEM SHALL BE MONITORED AND SHALL TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO AN APPROVED SUPERVISION STATION IN ACCORDANCE WITH NFPA 72, AS AMENDED BY CFC CHAPTER 80. THE SUPERVISION STATION SHALL BE LISTED AS EITHER UUFX (CENTRAL STATION OR UUJS (REMOTE & PROPRIETARY) BY UL OR OTHER APPROVED LISTING AND TESTING LABORATORY OR SHALL COMPLY WITH THE REQUIREMENTS OF STANDARD, FACTORY MUTUAL (FM) 3011. TERMINATION OF MONITORING SERVICES SHALL BE IN ACCORDANCE WITH CBC/CFC SECTION 907.6.6.3

## DEVICE LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| FATC | TERMINAL CABINET WITH PLYWOOD BACKBOARD |

## CONDUIT LEGEND

| | |
|---|---|
| ——— | CONDUIT CONCEALED IN WALL OR CEILING SPACE, UNLESS OTHERWISE NOTED |
| – – – – – | CONDUIT CONCEALED UNDER FLOOR OF SLAB OR UNDERGROUND, UNLESS OTHERWISE NOTED |

## WIRE LEGEND

| | |
|---|---|
| M | 1 #D122F FPL 1 PAIR 112 AWG SOLID 1 RED / 1 BLK – INTERIOR SLC |
| A | 2 #12 AWG SOLID THHN/THWN–2 1 PNK / 1 PRP – STROBES |
| V | 1 #122SF FPLR/CL3R 1 PAIR 12 AWG SOLID (SHEILD) 1 RED / 1 BLK –SPEAKERS |
| P | 2 #14 AWG SOLID THHN/THWN–2 1 RED / 1 BLK – 24V POWER |
| E | 1 #H2+122–RED 1 PAIR 12 AWG 1 RED / 1 BLK UNSHIELDED – UNDERGROUND SLC |
| F | 1 #H2+122S–RED 12 AWG 1 RED / 1 BLK – SHIELDED – UNDERGROUND SPEAKER |
| G | 2 #12 AWG SOLID THHN/THWN–2 1 PNK / 1 PRP – UNSHELDED – UNDERGROUND STROBES |

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-124843 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 12/11/2025


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E-Mail

AJ | - | - | NP

SEAL




PROJECT
MVUSD ALTA MURRIETA FA MOD

39475 Whitewood Rd.
Murrieta, CA 92563

CLIENT
MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

ISSUED

| MARK | DATE | DESCRIPTION |
|---|---|---|

MANAGEMENT

| | |
|---|---|
| LIONAKIS PROJECT NO: | 025164 |
| CLIENT PROJECT NO: | 700.00.007 |
| COPYRIGHT: | LIONAKIS 2017 |

TITLE
FIRE ALARM LEGEND AND GENERAL NOTES

SHEET
FA0.1


IF THIS SHEET IS NOT 30"x42", IT IS A REDUCED PRINT - SCALE ACCORDINGLY
Autodesk Docs://025164 - MVUSD Alta Murrieta FA Mod/025164_ARCHMSTR_R24_CENTRAL.rvt
8/13/2025 5:51:08 PM

## UL1971 VOLTAGE DROP FORMULA

| | | | | |
|---|---|---|---|---|
| VD | = | VOLTAGE DROP | | UL MAX VOLTAGE |
| L | = | ONE WAY LENGTH OF CIRCUIT (IN FEET) | VD = 2 x L x R x I / 1000 | 24VDC - 15% = 20.4 |
| R | = | CONDUCTOR RESISTANCE (IN OHMS/FEET) | | 20.4 |
| I | = | LOAD CURRENT (IN AMPS) | | Max Starting Volts |

## BATTERY CALCULATION

### MAIN FIRE ALARM CONTROL PANEL NFS2-3030

| EQUIPMENT | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | SUPERVISORY CURRENT (IN AMPS) TOTAL | ALARM CURRENT (IN AMPS) UNIT | ALARM CURRENT (IN AMPS) TOTAL |
|---|---|---|---|---|---|
| NFS2-3030 (CPU-3030) | 1 | 0.1200 | 0.1200 | 0.1200 | 0.1200 |
| NCA-2 Main Display | 1 | 0.2000 | 0.2000 | 0.4000 | 0.4000 |
| UDACT-2 Dialer | 1 | 0.0520 | 0.0520 | 0.0870 | 0.0870 |
| DVC-EM Digital Voice | 1 | 0.3000 | 0.3000 | 0.3000 | 0.3000 |
| DVC-KD Keyboard Display | 1 | 0.0600 | 0.0600 | 0.0600 | 0.0600 |
| DS-DB Audio Dist. Board | 1 | 0.3550 | 0.3550 | 0.5500 | 0.5500 |
| AMPS-24 Power Supply | 2 | 0.1300 | 0.2600 | 0.1300 | 0.2600 |
| DS-AMP 125 Watt Amp | 1 | 0.1250 | 0.1250 | 0.2800 | 0.2800 |
| DS-BDA Backup Amp | 1 | 0.1000 | 0.1000 | | |
| LCM-320 Loop Card | 2 | 0.1300 | 0.2600 | 0.1300 | 0.2600 |
| LEM-320 Loop Expander | 2 | 0.1000 | 0.2000 | 0.1000 | 0.2000 |
| Loop Activation in Alarm (Max worst case load) | 1 | | | 0.2000 | 0.2000 |
| LCD-160 Remote Annunciator | 1 | 0.3000 | 0.3000 | 0.3250 | 0.3250 |
| RM-1SA Remote Microphone | 1 | 0.0200 | 0.0200 | 0.0660 | 0.0660 |
| .5 Watt Speaker | 11 | | | 0.0310 | 0.3410 |
| 1 Watt Speaker | 3 | | | 0.0620 | 0.1860 |
| 2 Watt Speaker | 7 | | | 0.1240 | 0.8680 |
| SUB-TOTALS (IN AMPS) | | | 2.3520 | | 2.5880 |
| TIME FACTOR: 24 HOUR STANDBY | | | X 24 | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 |
| SUB-TOTALS (IN AMPHOURS): | | | 56.4480 | | 0.6470 |
| STANDBY AMPHOURS | 56.4480 | | | | |
| ALARM AMPHOURS | + 0.6470 | | | | |
| SYSTEM AMPHOURS | = 57.0950 | | | | |
| +20% DERATING | + 11.4190 | | | | |
| TOTAL AMPHOURS REQUIRED | = 68.5140 | | | | |
| TOTAL AMPHOURS PROVIDED | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - 68.5140 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = 31.49 | | | | |

## FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. A

24 VOLTS

| | CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 95cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.043 | 0.063 | 0.107 | 0.121 | 0.148 | | | | | |
| A-V1 | A-V1 | 8 | 0 | 3 | 0 | 2 | 0.961 | 6530 | 400 | 1.484 | 6.182% |
| F-V1 | F-V1 | 3 | 0 | 1 | 0 | 1 | 0.384 | 6530 | 500 | 0.741 | 3.088% |

## BLDG. A - SPEAKER CIRCUIT CALCULATION

| CIRCUIT NO.. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | TOTAL WATTS (AMPS) | WIRE SIZE AWG | MAX DISTANCE (FEET) | PERCENT VOLTAGE DROP (%) | END OF LINE VOLTS (V) | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| A-A1 | | 8 | 2 | 4 | | | | | | 0.2 | #12 | 450 | 0.51% | 69.64 | BLDG A | FACP |
| F-A1 | | 3 | 1 | 3 | | | | | | 0.122 | #12 | 500 | 0.35% | 69.76 | BLDG F | FACP |

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APP: 04-124843 INC:
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PROJECT
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| CLIENT PROJECT NO: | 700.00.007 |
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TITLE
FIRE ALARM VOLTAGE DROP AND BATTERY CALCULATIONS

SHEET
FA0.2


IF THIS SHEET IS NOT 30"x42", IT IS A REDUCED PRINT - SCALE ACCORDINGLY
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## BLDG. B — RPS Battery Calculation

### Secondary Power Source Requirements

| Device Type | Standby Current (amps) Qty | Current Draw | Total | Secondary Alarm Current (amps) Qty | Current Draw | Total |
|---|---|---|---|---|---|---|
| Main Circuit Board | | | | | | |
| Choose EOLR used ↓ 4.7k | 1 | X 0.1560 = | 0.1560 | 1 | X 0.1850 = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X 0.1490 = | 0.1490 | 1 | X 0.1590 = | 0.1590 |
| NAC / Output # 1 | 1 | X 0.0000 = | 0.0000 | 1 | X 1.5020 = | 1.5020 |
| NAC / Output # 2 | 1 | X 0.0000 = | 0.0000 | 1 | X 1.3940 = | 1.3940 |
| NAC / Output # 3 | 0 | X 0.0000 = | 0.0000 | 0 | X 0.0000 = | 0.0000 |
| NAC / Output # 4 | 0 | X 0.0000 = | 0.0000 | 0 | X 0.0000 = | 0.0000 |
| Smoke Det. FSP-951 | 22 | X 0.000045 = | 0.0010 | 22 | X 0.000045 = | 0.0010 |
| Heat. Det. FST-951 | 16 | X 0.000045 = | 0.0007 | 16 | X 0.000045 = | 0.0007 |
| Smoke/CO Det. FCO-951 | 3 | X 0.0000 = | 0.0000 | 3 | X 0.0000 = | 0.0000 |
| | | Total Standby Load | 0.3067 | | Total Alarm Load | 3.2417 |

### RPS Battery Calculation

Note 1: You are **fully responsible for verifying these calculations.**
Note 2: You only need to make entries in the **yellow** cells

**Calculation in Total Sheet**

| | | | | |
|---|---|---|---|---|
| | | | Required Standby Time in Hours: 24 Hours | |
| Standby Load Current (Amps) | 0.3067 Amps | X | 24 | = 7.361 AH |
| | | | Required Alarm Time in Hours: 15 Minutes | |
| Alarm Load Current (Amps) | 3.2417 Amps | X | 0.25 | = 0.810 AH |
| | | | Total Current Load | 8.17 AH |
| | *Multiply by the Derating Factor | | 1.2 | = x 1.20 |
| | | | Total Ampere Hours Required | 9.81 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

### PSE-10 Circuit Detail

**NAC / Output # 1**

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 7 | x 0.000000 = | 0.000000 | 7 | x 0.066000 = | 0.462000 |
| 30cd SPSWL-CLR-ALERT | 1 | x 0.000000 = | 0.000000 | 1 | x 0.094000 = | 0.094000 |
| 75cd SPSWL-CLR-ALERT | 3 | x 0.000000 = | 0.000000 | 3 | x 0.158000 = | 0.474000 |
| 2WATTS SPRK | 3 | x 0.000000 = | 0.000000 | 3 | x 0.090000 = | 0.270000 |
| 110cd SPSWL-CLR-ALERT | 1 | x 0.000000 = | 0.000000 | 1 | x 0.202000 = | 0.202000 |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 1.502000 |

**NAC / Output # 2**

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 8 | x 0.000000 = | 0.000000 | 8 | x 0.066000 = | 0.528000 |
| 30cd SPSWL-CLR-ALERT | 3 | x 0.000000 = | 0.000000 | 3 | x 0.094000 = | 0.282000 |
| 75cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.158000 = | |
| 2WATTS SPRK | 2 | x 0.000000 = | 0.000000 | 2 | x 0.090000 = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 2 | x 0.000000 = | 0.000000 | 2 | x 0.202000 = | 0.404000 |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 1.394000 |

## BLDG. C — PSE-10 Battery Calculation

### Secondary Power Source Requirements

| Device Type | Standby Current (amps) Qty | Current Draw | Total | Secondary Alarm Current (amps) Qty | Current Draw | Total |
|---|---|---|---|---|---|---|
| Main Circuit Board | | | | | | |
| Choose EOLR used ↓ 4.7k | 1 | X 0.1560 = | 0.1560 | 1 | X 0.1850 = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X 0.1490 = | 0.1490 | 1 | X 0.1590 = | 0.1590 |
| NAC / Output # 1 | 1 | X 0.0000 = | 0.0000 | 1 | X 0.9900 = | 0.9900 |
| NAC / Output # 2 | 1 | X 0.0000 = | 0.0000 | 1 | X 1.1800 = | 1.1800 |
| NAC / Output # 3 | 1 | X 0.0000 = | 0.0000 | 1 | X 1.0120 = | 1.0120 |
| NAC / Output # 4 | 0 | X 0.0000 = | 0.0000 | 0 | X 0.0000 = | 0.0000 |
| Smoke Det. FSP-951 | 24 | X 0.000045 = | 0.0011 | 24 | X 0.000045 = | 0.0011 |
| Heat. Det. FST-951 | 26 | X 0.000045 = | 0.0012 | 26 | X 0.000045 = | 0.0012 |
| Smoke/CO Det. FCO-951 | 8 | X 0.017000 = | 0.1360 | 8 | X 0.0000 = | 0.0000 |
| | | Total Standby Load | 0.4433 | | Total Alarm Load | 3.5283 |

### PSE-10 Battery Calculation

Note 1: You are **fully responsible for verifying these calculations.**
Note 2: You only need to make entries in the **yellow** cells

**Calculation in Total Sheet**

| | | | | |
|---|---|---|---|---|
| | | | Required Standby Time in Hours: 24 Hours | |
| Standby Load Current (Amps) | 0.4433 Amps | X | 24 | = 10.638 AH |
| | | | Required Alarm Time in Hours: 15 Minutes | |
| Alarm Load Current (Amps) | 3.5283 Amps | X | 0.25 | = 0.882 AH |
| | | | Total Current Load | 11.52 AH |
| | *Multiply by the Derating Factor | | 1.2 | = x 1.20 |
| | | | Total Ampere Hours Required | 13.82 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

### PSE-10 Circuit Detail

**NAC / Output # 1**

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.066000 = | |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.094000 = | |
| 75cd SPSWL-CLR-ALERT | 3 | x 0.000000 = | 0.000000 | 3 | x 0.158000 = | 0.474000 |
| 2WATTS SPRK | 3 | x 0.000000 = | 0.000000 | 3 | x 0.090000 = | 0.270000 |
| 150cd SPSWL-CLR-ALERT | 1 | x 0.000000 = | 0.000000 | 1 | x 0.246000 = | 0.246000 |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 0.990000 |

**NAC / Output # 2**

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 3 | x 0.000000 = | 0.000000 | 3 | x 0.066000 = | 0.198000 |
| 30cd SPSWL-CLR-ALERT | 4 | x 0.000000 = | 0.000000 | 4 | x 0.094000 = | 0.376000 |
| 75cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.158000 = | |
| 2WATTS SPRK | 4 | x 0.000000 = | 0.000000 | 4 | x 0.090000 = | 0.360000 |
| 150cd SPSWL-CLR-ALERT | 1 | x 0.000000 = | 0.000000 | 1 | x 0.246000 = | 0.246000 |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 1.180000 |

## BATTERY CALCULATION
## VOICE EVAC EXPANSION CABINET - BLDG B

| EQUIPMENT | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | TOTAL | ALARM CURRENT (IN AMPS) UNIT | TOTAL |
|---|---|---|---|---|---|
| DS-DB Audio Dist. Board | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | 1 | 0.1250 | | | |
| DS-BDA Backup Amp | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | 1 | 0.3600 | 0.3600 | 0.3600 | 0.3600 |
| .5 Watt Speaker | 4 | | | 0.0310 | 0.1240 |
| 1 Watt Speaker | 3 | | | 0.0620 | 0.1860 |
| 2 Watt Speaker | 2 | | | 0.1240 | 0.2480 |
| SUB-TOTALS (IN AMPS) | | | 0.8150 | | 1.1780 |
| TIME FACTOR: 72 HOUR STANDBY | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 |
| SUB-TOTALS (IN AMPHOURS): | | | 58.6800 | | 0.2945 |
| STANDBY AMPHOURS | 58.6800 | | | | |
| ALARM AMPHOURS + | 0.2945 | | | | |
| SYSTEM AMPHOURS = | 58.9745 | | | | |
| +20% DERATING + | 11.7949 | | | | |
| TOTAL AMPHOURS REQUIRED = | 70.7694 | | | | |
| TOTAL AMPHOURS PROVIDED | 100.00 | | | | |
| LESS AMPHOURS REQUIRED - | 70.7694 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY = | 29.23 | | | | |

### FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. B

24 VOLTS

| | CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 95cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.043 | 0.063 | 0.107 | 0.121 | 0.148 | | | | | |
| B-V1 | B-V1 | 3 | 1 | 1 | 0 | 2 | 0.595 | 6530 | 450 | 1.034 | 4.306% |
| G-V1 | G-V1 | 0 | 0 | 2 | 0 | 0 | 0.214 | 6530 | 450 | 0.372 | 1.549% |

### BLDG. B - SPEAKER CIRCUIT CALCULATION

| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | TOTAL WATTS (AMPS) | WIRE SIZE AWG | MAX DISTANCE (FEET) | PERCENT VOLTAGE DROP (%) | END OF LINE VOLTS (V) | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| B-A1 | | 4 | 2 | 2 | | | | | | 0.114 | #12 | 450 | 0.29% | 69.80 | BLDG. B | EVAC-B |
| G-A1 | | | 2 | | | | | | | 0.028 | #12 | 500 | 0.08% | 69.94 | BLDG. G | EVAC-B |

## BATTERY CALCULATION
## VOICE EVAC EXPANSION CABINET - BLDG C

| EQUIPMENT | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | TOTAL | ALARM CURRENT (IN AMPS) UNIT | TOTAL |
|---|---|---|---|---|---|
| DS-DB Audio Dist. Board | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | 1 | 0.3600 | 0.3600 | 0.3600 | 0.3600 |
| .5 Watt Speaker | 11 | | | 0.0310 | 0.3410 |
| 1 Watt Speaker | 3 | | | 0.0620 | 0.1860 |
| 2 Watt Speaker | 6 | | | 0.1240 | 0.7440 |
| SUB-TOTALS (IN AMPS) | | | 0.9400 | | 1.8910 |
| TIME FACTOR: 72 HOUR STANDBY | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 |
| SUB-TOTALS (IN AMPHOURS): | | | 67.6800 | | 0.4728 |
| STANDBY AMPHOURS | 67.6800 | | | | |
| ALARM AMPHOURS + | 0.4728 | | | | |
| SYSTEM AMPHOURS = | 68.1528 | | | | |
| +20% DERATING + | 13.6306 | | | | |
| TOTAL AMPHOURS REQUIRED = | 81.7833 | | | | |
| TOTAL AMPHOURS PROVIDED | 100.00 | | | | |
| LESS AMPHOURS REQUIRED - | 81.7833 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY = | 18.22 | | | | |

### FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. C

24 VOLTS

| | CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 95cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.043 | 0.063 | 0.107 | 0.121 | 0.148 | | | | | |
| C-V1 | C-V1 | 4 | 2 | 2 | 0 | 2 | 0.808 | 6530 | 450 | 1.403 | 5.848% |
| C-V2 | C-V2 | 4 | 0 | 0 | 0 | 2 | 0.468 | 6530 | 450 | 0.813 | 3.387% |
| H-V1 | H-V1 | 0 | 0 | 2 | 0 | 0 | 0.214 | 6530 | 500 | 0.413 | 1.721% |

### BLDG. C - SPEAKER CIRCUIT CALCULATION

| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | TOTAL WATTS (AMPS) | WIRE SIZE AWG | MAX DISTANCE (FEET) | PERCENT VOLTAGE DROP (%) | END OF LINE VOLTS (V) | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| C-A1 | | 7 | 1 | | 3 | | | | | 0.15 | #12 | 500 | 0.42% | 69.70 | BLDG C | EVAC-C |
| C-A2 | | 4 | | | 3 | | | | | 0.115 | #12 | 500 | 0.33% | 69.77 | BLDG C | EVAC-C |
| H-A1 | | | 2 | | | | | | | 0.028 | #12 | 500 | 0.08% | 69.94 | BLDG H | EVAC-C |

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APP: 04-124843 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 12/11/2025


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Exp. 6/30/27
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39475 Whitewood Rd.
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CLIENT
MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

ISSUED

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|---|---|---|

MANAGEMENT

| | |
|---|---|
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| CLIENT PROJECT NO: | 700.00.007 |
| COPYRIGHT: | LIONAKIS 2017 |

TITLE
FIRE ALARM VOLTAGE DROP AND BATTERY CALCULATIONS

SHEET
FA0.3


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8/13/2025 5:51:08 PM

BLDG.D

## PSE-10 Battery Calculation

### Secondary Power Source Requirements

| Device Type | Standby Current (amps) Qty | | Current Draw | | Total | Secondary Alarm Current (amps) Qty | | Current Draw | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Main Circuit Board | | | | | | | | | | |
| Choose EOLR used ; 4.7k | 1 | X | 0.1560 | = | 0.1560 | 1 | X | 0.1850 | = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X | 0.1490 | = | 0.1490 | 1 | X | 0.1590 | = | 0.1590 |
| NAC / Output # 1 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 1.1980 | = | 1.1980 |
| NAC / Output # 2 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 0.6920 | = | 0.6920 |
| NAC / Output # 3 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 4 | 0 | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| Smoke Det. FSP-951 | 31 | X | 0.000045 | = | 0.0014 | 31 | X | 0.000045 | = | 0.0014 |
| Heat. Det. FST-951 | 26 | X | 0.000045 | = | 0.0012 | 26 | X | 0.0000 | = | 0.0000 |
| | | | | Total Standby Load | 0.3076 | | | | Total Alarm Load | 2.2354 |

### PSE-10 Battery Calculation

Note 1: You are **fully responsible for verifying these calculations**.
Note 2: You only need to make entries in the **yellow** cells

### Calculation in Total Sheet

| | | | Required Standby Time in Hours (24 Hours) | | |
|---|---|---|---|---|---|
| Standby Load Current (Amps) | 0.3076 Amps | X | 24 | = | 7.382 AH |
| | | | Required Alarm Time in Hours (15 Minutes) | | |
| Alarm Load Current (Amps) | 2.2354 Amps | X | 0.25 | = | 0.559 AH |
| | | | Total Current Load | | 7.94 AH |
| | *Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | Total Ampere Hours Required | | 9.53 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

### PSE-10 Circuit Detail

NAC / Output # 1

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.066000 = | |
| 30cd SPSWL-CLR-ALERT | 2 | x 0.000000 = | 0.000000 | 2 | x 0.094000 = | 0.188000 |
| 75cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.158000 = | |
| 2WATTS SPRK | 0 | x 0.000000 = | | 0 | x 0.090000 = | |
| 110cd SPSWL-CLR-ALERT | 5 | x 0.000000 = | 0.000000 | 5 | x 0.202000 = | 1.010000 |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 1.198000 |

NAC / Output # 2

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 3 | x 0.000000 = | 0.000000 | 3 | x 0.066000 = | 0.198000 |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.094000 = | |
| 75cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.158000 = | |
| 2WATTS SPRK | 1 | x 0.000000 = | 0.000000 | 1 | x 0.090000 = | 0.090000 |
| 110cd SPSWL-CLR-ALERT | 2 | x 0.000000 = | 0.000000 | 2 | x 0.202000 = | 0.404000 |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | 0 | x 0.000000 = | | 0 | x 0.000000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 0.692000 |

## BATTERY CALCULATION

### VOICE EVAC EXPANSION CABINET - BLDG D

| EQUIPMENT | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | SUPERVISORY CURRENT (IN AMPS) TOTAL | ALARM CURRENT (IN AMPS) UNIT | ALARM CURRENT (IN AMPS) TOTAL |
|---|---|---|---|---|---|
| DS-DB Audio Dist. Board | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | 1 | 0.3600 | 0.3600 | 0.3600 | 0.3600 |
| 5 Watt Speaker | 5 | | | 0.0310 | 0.1550 |
| 1 Watt Speaker | | | | 0.0620 | |
| 2 Watt Speaker | 7 | | | 0.1240 | 0.8680 |
| SUB-TOTALS (IN AMPS) | | | 0.9400 | | 1.6430 |
| TIME FACTOR: 72 HOUR STANDBY | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 |
| SUB-TOTALS (IN AMPHOURS): | | | 67.6800 | | 0.4108 |
| STANDBY AMPHOURS | 67.6800 | | | | |
| + ALARM AMPHOURS | 0.4108 | | | | |
| SYSTEM AMPHOURS | = 68.0908 | | | | |
| +20% DERATING | + 13.6182 | | | | |
| TOTAL AMPHOURS REQUIRED | = 81.7089 | | | | |
| TOTAL AMPHOURS PROVIDED | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - 81.7089 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = 18.29 | | | | |

### FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. D

24 VOLTS

| | CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 95cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.043 | 0.063 | 0.107 | 0.121 | 0.148 | | | | | |
| D-V1 | D-V1 | 0 | 2 | 0 | 0 | 5 | 0.866 | 6530 | 500 | 1.671 | 6.964% |
| D-V2 | D-V2 | 3 | 0 | 0 | 0 | 2 | 0.425 | 6530 | 500 | 0.820 | 3.418% |

### BLDG. D - SPEAKER CIRCUIT CALCULATION

| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | TOTAL WATTS (AMPS) | WIRE SIZE AWG | MAX DISTANCE (FEET) | PERCENT VOLTAGE DROP (%) | END OF LINE VOLTS (V) | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| D-A1 | | 2 | | | 5 | | | | | 0.159 | #12 | 500 | 0.45% | 69.69 | BLDG D | EVAC-D |
| D-A2 | | 3 | | | 3 | | | | | 0.108 | #12 | 500 | 0.31% | 69.79 | BLDG D | EVAC-D |

BLDG. E

## PSE-10 Battery Calculation

### Secondary Power Source Requirements

| Device Type | Standby Current (amps) Qty | | Current Draw | | Total | Secondary Alarm Current (amps) Qty | | Current Draw | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Main Circuit Board | | | | | | | | | | |
| Choose EOLR used ; 4.7k | 1 | X | 0.1560 | = | 0.1560 | 1 | X | 0.1850 | = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X | 0.1490 | = | 0.1490 | 1 | X | 0.1590 | = | 0.1590 |
| NAC / Output # 1 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 0.9700 | = | 0.9700 |
| NAC / Output # 2 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 1.1020 | = | 1.1020 |
| NAC / Output # 3 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 0.5640 | = | 0.5640 |
| NAC / Output # 4 | 0 | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| Smoke Det. FSP-951 | 36 | X | 0.000045 | = | 0.0016 | 36 | X | 0.000045 | = | 0.0016 |
| Heat. Det. FST-951 | 27 | X | 0.000045 | = | 0.0012 | 27 | X | 0.0000 | = | 0.0000 |
| | | | | Total Standby Load | 0.3078 | | | | Total Alarm Load | 2.9816 |

### PSE-10 Battery Calculation

Note 1: You are **fully responsible for verifying these calculations**.
Note 2: You only need to make entries in the **yellow** cells

### Calculation in Total Sheet

| | | | Required Standby Time in Hours (24 Hours) | | |
|---|---|---|---|---|---|
| Standby Load Current (Amps) | 0.3078 Amps | X | 24 | = | 7.388 AH |
| | | | Required Alarm Time in Hours (15 Minutes) | | |
| Alarm Load Current (Amps) | 2.9816 Amps | X | 0.25 | = | 0.745 AH |
| | | | Total Current Load | | 8.13 AH |
| | *Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | Total Ampere Hours Required | | 9.76 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

### PSE-10 Circuit Detail

NAC / Output # 1

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.066000 = | |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.094000 = | |
| 75cd SPSWL-CLR-ALERT | 5 | x 0.000000 = | 0.000000 | 5 | x 0.158000 = | 0.790000 |
| 2WATTS SPRK | 2 | x 0.000000 = | 0.000000 | 2 | x 0.090000 = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.202000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 0.970000 |

NAC / Output # 2

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 2 | x 0.000000 = | 0.000000 | 2 | x 0.066000 = | 0.132000 |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.094000 = | |
| 75cd SPSWL-CLR-ALERT | 5 | x 0.000000 = | 0.000000 | 5 | x 0.158000 = | 0.790000 |
| 2WATTS SPRK | 2 | x 0.000000 = | 0.000000 | 2 | x 0.090000 = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.202000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 1.102000 |

NAC / Output # 3

| Device | Qty | Non-Alarm Draw | Total | Qty | Alarm Draw | Total |
|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.066000 = | |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.094000 = | |
| 75cd SPSWL-CLR-ALERT | 3 | x 0.000000 = | 0.000000 | 3 | x 0.158000 = | 0.474000 |
| 2WATTS SPRK | 1 | x 0.000000 = | 0.000000 | 1 | x 0.090000 = | 0.090000 |
| 110cd SPSWL-CLR-ALERT | 0 | x 0.000000 = | | 0 | x 0.202000 = | |
| | | Total Standby Load | 0.000000 | | Total Alarm Load | 0.564000 |

## BATTERY CALCULATION

### VOICE EVAC EXPANSION CABINET - BLDG E

| EQUIPMENT | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | SUPERVISORY CURRENT (IN AMPS) TOTAL | ALARM CURRENT (IN AMPS) UNIT | ALARM CURRENT (IN AMPS) TOTAL |
|---|---|---|---|---|---|
| DS-DB Audio Dist. Board | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | 1 | 0.3600 | 0.3600 | 0.3600 | 0.3600 |
| 5 Watt Speaker | 2 | | | 0.0310 | 0.0620 |
| 1 Watt Speaker | 13 | | | 0.0620 | 0.8060 |
| 2 Watt Speaker | 4 | | | 0.1240 | 0.4960 |
| SUB-TOTALS (IN AMPS) | | | 0.9400 | | 1.9840 |
| TIME FACTOR: 72 HOUR STANDBY | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 |
| SUB-TOTALS (IN AMPHOURS): | | | 67.6800 | | 0.4960 |
| STANDBY AMPHOURS | 67.6800 | | | | |
| + ALARM AMPHOURS | 0.4960 | | | | |
| SYSTEM AMPHOURS | = 68.1760 | | | | |
| +20% DERATING | + 13.6352 | | | | |
| TOTAL AMPHOURS REQUIRED | = 81.8112 | | | | |
| TOTAL AMPHOURS PROVIDED | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - 81.8112 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = 18.19 | | | | |

### FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. E

24 VOLTS

| | CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.043 | 0.063 | 0.107 | 0.148 | | | | | |
| E-V1 | E-V1 | 0 | 0 | 5 | 0 | 0.535 | 6530 | 450 | 0.929 | 3.872% |
| E-V2 | E-V2 | 2 | 0 | 5 | 0 | 0.621 | 6530 | 450 | 1.079 | 4.494% |
| J-V1 | J-V1 | 0 | 0 | 3 | 0 | 0.321 | 6530 | 450 | 0.558 | 2.323% |

### BLDG. E - SPEAKER CIRCUIT CALCULATION

| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | TOTAL WATTS (AMPS) | WIRE SIZE AWG | MAX DISTANCE (FEET) | PERCENT VOLTAGE DROP (%) | END OF LINE VOLTS (V) | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| E-A1 | | | 5 | | 1 | | | | | 0.099 | #12 | 500 | 0.28% | 69.80 | BLDG E | EVAC-E |
| E-A2 | | 2 | 5 | | 2 | | | | | 0.142 | #12 | 500 | 0.40% | 69.72 | BLDG E | EVAC-E |
| J-A1 | | | 3 | | 1 | | | | | 0.071 | #12 | 500 | 0.20% | 69.86 | BLDG J | EVAC-E |

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-124843 INC:
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DATE: 12/11/2025


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EDMOND A. SALAS
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Exp. 8/30/27
ELECTRICAL
STATE OF CALIFORNIA

PROJECT
MVUSD ALTA MURRIETA FA MOD

39475 Whitewood Rd.
Murrieta, CA 92563

CLIENT
MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

ISSUED

| MARK | DATE | DESCRIPTION |
|---|---|---|

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| CLIENT PROJECT NO: | 700.00.007 |
| COPYRIGHT: | LIONAKIS 2017 |

TITLE
FIRE ALARM VOLTAGE DROP AND BATTERY CALCULATIONS

SHEET
FA0.4

IF THIS SHEET IS NOT 30"x42", IT IS A REDUCED PRINT - SCALE ACCORDINGLY
2" 1" 1/2" 1/4" 0
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8/13/2025 5:51:08 PM

| BLDG. L | PSE-10 Battery Calculation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Secondary Power Source Requirements | | | | | | | | | | |
| | Standby Current (amps) | | | | | Secondary Alarm Current (amps) | | | | |
| Device Type | Qty | | Current Draw | | Total | Qty | | Current Draw | | Total |
| Main Circuit Board | | | | | | | | | | |
| Choose EOLR used ↓ 4.7k | 1 | X | 0.1560 | = | 0.1560 | 1 | X | 0.1850 | = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X | 0.1490 | = | 0.1490 | 1 | X | 0.1590 | = | 0.1590 |
| NAC / Output # 1 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 1.0380 | = | 1.0380 |
| NAC / Output # 2 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 1.0780 | = | 1.0780 |
| NAC / Output # 3 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 4 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| Smoke Det. FSP-951 | 25 | X | 0.000045 | = | 0.0011 | 25 | X | 0.000045 | = | 0.0011 |
| Heat. Det. FST-951 | 3 | X | 0.000045 | = | 0.0001 | 3 | X | 0.0000 | = | 0.0000 |
| | | | | Total Standby Load | 0.3063 | | | | Total Alarm Load | 2.4611 |

| PSE-10 Battery Calculation | | | | | |
|---|---|---|---|---|---|
| Note 1: You are **fully responsible for verifying these calculations**. | | | | | |
| Note 2: You only need to make entries in the **yellow** cells | | | | | |
| Calculation in Total Sheet | | | | | |
| | | Required Standby Time in Hours | | | |
| | | 24 Hours | | | |
| Standby Load Current (Amps) | 0.3063 Amps | X | 24 | = | 7.350 AH |
| | | Required Alarm Time in Hours | | | |
| | | 15 Minutes | | | |
| Alarm Load Current (Amps) | 2.4611 Amps | X | 0.25 | = | 0.615 AH |
| | | | Total Current Load | | 7.97 AH |
| | *Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | Total Ampere Hours Required | | 9.56 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

| PSE-10 Circuit Detail | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NAC / Output # 1 | | | | | | | | | | |
| Device | Qty | Non-Alarm Draw | | | Total | Qty | Alarm Draw | | | Total |
| 15cd SPSWL-CLR-ALERT | 3 | x | 0.000000 | = | 0.000000 | 3 | x | 0.066000 | = | 0.198000 |
| 30cd SPSWL-CLR-ALERT | 2 | x | 0.000000 | = | 0.000000 | 2 | x | 0.094000 | = | 0.188000 |
| 75cd SPSWL-CLR-ALERT | 1 | x | 0.000000 | = | 0.000000 | 1 | x | 0.158000 | = | 0.158000 |
| 2WATTS SPRK | 1 | x | 0.000000 | = | 0.000000 | 1 | x | 0.090000 | = | 0.090000 |
| 110cd SPSWL-CLR-ALERT | 2 | x | 0.000000 | = | 0.000000 | 2 | x | 0.202000 | = | 0.404000 |
| | | | | Total Standby Load | 0.000000 | | | | Total Alarm Load | 1.038000 |
| NAC / Output # 2 | | | | | | | | | | |
| Device | Qty | Non-Alarm Draw | | | Total | Qty | Alarm Draw | | | Total |
| 15cd SPSWL-CLR-ALERT | 1 | x | 0.000000 | = | 0.000000 | 1 | x | 0.066000 | = | 0.066000 |
| 30cd SPSWL-CLR-ALERT | 0 | x | 0.000000 | = | | 0 | x | 0.094000 | = | |
| 75cd SPSWL-CLR-ALERT | 2 | x | 0.000000 | = | 0.000000 | 2 | x | 0.158000 | = | 0.316000 |
| 2WATTS SPRK | 1 | x | 0.000000 | = | 0.000000 | 1 | x | 0.090000 | = | 0.090000 |
| 110cd SPSWL-CLR-ALERT | 3 | x | 0.000000 | = | 0.000000 | 3 | x | 0.202000 | = | 0.606000 |
| | | | | Total Standby Load | 0.000000 | | | | Total Alarm Load | 1.078000 |

| BATTERY CALCULATION | | | | | |
|---|---|---|---|---|---|
| VOICE EVAC EXPANSION CABINET - BLDG L | | | | | |
| EQUIPMENT | QUANTITY | SUPERVISORY CURRENT (IN AMPS) | | ALARM CURRENT (IN AMPS) | |
| | | UNIT | TOTAL | UNIT | TOTAL |
| DS-DB Audio Dist. Board | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | | 0.3600 | | 0.3600 | |
| 5 Watt Speaker | 6 | | | 0.0310 | 0.1860 |
| 1 Watt Speaker | 3 | | | 0.0620 | 0.1860 |
| 2 Watt Speaker | 6 | | | 0.1240 | 0.7440 |
| SUB-TOTALS (IN AMPS) | | | 0.5800 | | 1.3760 |
| TIME FACTOR: 72 HOUR STANDBY | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | X 0.250 | |
| SUB-TOTALS (IN AMPHOURS): | | | 41.7600 | | 0.3440 |
| STANDBY AMPHOURS | 41.7600 | | | | |
| ALARM AMPHOURS | + 0.3440 | | | | |
| SYSTEM AMPHOURS | = 42.1040 | | | | |
| +20% DERATING | + 8.4208 | | | | |
| TOTAL AMPHOURS REQUIRED | = 50.5248 | | | | |
| TOTAL AMPHOURS PROVIDED | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - 50.5248 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = 49.48 | | | | |

| FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. L | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 24 VOLTS | | | | | | | | |
| | CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
| | | 0.043 | 0.063 | 0.107 | 0.148 | | | | | |
| L-V1 | L-V1 | 3 | 2 | 1 | 2 | 0.658 | 6530 | 450 | 1.143 | 4.762% |
| L-V2 | L-V2 | 1 | 0 | 1 | 3 | 0.594 | 6530 | 450 | 1.032 | 4.299% |

| BLDG. L - SPEAKER CIRCUIT CALCULATION | | | | | | | | | | TOTAL WATTS | WIRE SIZE | MAX DISTANCE | PERCENT VOLTAGE DROP | END OF LINE VOLTS | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | (AMPS) | AWG | (FEET) | (%) | (V) | | |
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| L-A1 | | 5 | 1 | | 3 | | | | | 0.136 | #12 | 500 | 0.38% | 69.73 | BLDG L | EVAC-L |
| L-A2 | | 1 | 2 | | 4 | | | | | 0.151 | #12 | 500 | 0.43% | 69.70 | BLDG L | EVAC-L |

| PORTABLE. PB | PSE-10 Battery Calculation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Secondary Power Source Requirements | | | | | | | | | | |
| | Standby Current (amps) | | | | | Secondary Alarm Current (amps) | | | | |
| Device Type | Qty | | Current Draw | | Total | Qty | | Current Draw | | Total |
| Main Circuit Board | | | | | | | | | | |
| Choose EOLR used ↓ 4.7k | 1 | X | 0.1560 | = | 0.1560 | 1 | X | 0.1850 | = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X | 0.1490 | = | 0.1490 | 1 | X | 0.1590 | = | 0.1590 |
| NAC / Output # 1 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 1.1660 | = | 1.1660 |
| NAC / Output # 2 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 0.8120 | = | 0.8120 |
| NAC / Output # 3 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 4 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| Smoke Det. FSP-951 | 20 | X | 0.000045 | = | 0.0009 | 20 | X | 0.000045 | = | 0.0009 |
| Heat. Det. FST-951 | 20 | X | 0.000045 | = | 0.0009 | 20 | X | 0.0000 | = | 0.0000 |
| | | | | Total Standby Load | 0.3068 | | | | Total Alarm Load | 2.3229 |

| PSE-10 Battery Calculation | | | | | |
|---|---|---|---|---|---|
| Note 1: You are **fully responsible for verifying these calculations**. | | | | | |
| Note 2: You only need to make entries in the **yellow** cells | | | | | |
| Calculation in Total Sheet | | | | | |
| | | Required Standby Time in Hours | | | |
| | | 24 Hours | | | |
| Standby Load Current (Amps) | 0.3068 Amps | X | 24 | = | 7.363 AH |
| | | Required Alarm Time in Hours | | | |
| | | 15 Minutes | | | |
| Alarm Load Current (Amps) | 2.3229 Amps | X | 0.25 | = | 0.581 AH |
| | | | Total Current Load | | 7.94 AH |
| | *Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | Total Ampere Hours Required | | 9.53 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

| PSE-10 Circuit Detail | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NAC / Output # 1 | | | | | | | | | | |
| Device | Qty | Non-Alarm Draw | | | Total | Qty | Alarm Draw | | | Total |
| 15cd SPSWL-CLR-ALERT | 4 | x | 0.000000 | = | 0.000000 | 4 | x | 0.066000 | = | 0.264000 |
| 30cd SPSWL-CLR-ALERT | 0 | x | 0.000000 | = | | 0 | x | 0.094000 | = | |
| 75cd SPSWL-CLR-ALERT | 4 | x | 0.000000 | = | 0.000000 | 4 | x | 0.158000 | = | 0.632000 |
| 2WATTS SPRK | 3 | x | 0.000000 | = | 0.000000 | 3 | x | 0.090000 | = | 0.270000 |
| 110cd SPSWL-CLR-ALERT | 0 | x | 0.000000 | = | | 0 | x | 0.202000 | = | |
| | | | | Total Standby Load | 0.000000 | | | | Total Alarm Load | 1.166000 |
| NAC / Output # 2 | | | | | | | | | | |
| Device | Qty | Non-Alarm Draw | | | Total | Qty | Alarm Draw | | | Total |
| 15cd SPSWL-CLR-ALERT | 0 | x | 0.000000 | = | | 0 | x | 0.066000 | = | |
| 30cd SPSWL-CLR-ALERT | 0 | x | 0.000000 | = | | 0 | x | 0.094000 | = | |
| 75cd SPSWL-CLR-ALERT | 4 | x | 0.000000 | = | 0.000000 | 4 | x | 0.158000 | = | 0.632000 |
| 2WATTS SPRK | 2 | x | 0.000000 | = | 0.000000 | 2 | x | 0.090000 | = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 0 | x | 0.000000 | = | | 0 | x | 0.202000 | = | |
| | | | | Total Standby Load | 0.000000 | | | | Total Alarm Load | 0.812000 |

| BATTERY CALCULATION | | | | | |
|---|---|---|---|---|---|
| VOICE EVAC EXPANSION CABINET - PORTABLES PB | | | | | |
| EQUIPMENT | QUANTITY | SUPERVISORY CURRENT (IN AMPS) | | ALARM CURRENT (IN AMPS) | |
| | | UNIT | TOTAL | UNIT | TOTAL |
| DS-DB Audio Dist. Board | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | | 0.3600 | | 0.3600 | |
| .5 Watt Speaker | 4 | | | 0.0310 | 0.1240 |
| 1 Watt Speaker | 7 | | | 0.0620 | 0.4340 |
| 2 Watt Speaker | 5 | | | 0.1240 | 0.6200 |
| SUB-TOTALS (IN AMPS) | | | 0.5800 | | 1.4380 |
| TIME FACTOR: 72 HOUR STANDBY | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | X 0.250 | |
| SUB-TOTALS (IN AMPHOURS): | | | 41.7600 | | 0.3595 |
| STANDBY AMPHOURS | 41.7600 | | | | |
| ALARM AMPHOURS | + 0.3595 | | | | |
| SYSTEM AMPHOURS | = 42.1195 | | | | |
| +20% DERATING | + 8.4239 | | | | |
| TOTAL AMPHOURS REQUIRED | = 50.5434 | | | | |
| TOTAL AMPHOURS PROVIDED | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - 50.5434 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = 49.46 | | | | |

| FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. PB | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 24 VOLTS | | | | | | | | |
| | CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
| | | 0.043 | 0.063 | 0.107 | 0.148 | | | | | |
| PB-V1 | PB-V1 | 4 | 0 | 4 | 0 | 0.6 | 6530 | 450 | 1.042 | 4.343% |
| PB-V2 | PB-V2 | 0 | 0 | 4 | 0 | 0.428 | 6530 | 450 | 0.743 | 3.098% |

| PORT. PB - SPEAKER CIRCUIT CALCULATION | | | | | | | | | | TOTAL WATTS | WIRE SIZE | MAX DISTANCE | PERCENT VOLTAGE DROP | END OF LINE VOLTS | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | (AMPS) | AWG | (FEET) | (%) | (V) | | |
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| PB-A1 | | 4 | 4 | | 3 | | | | | 0.171 | #12 | 500 | 0.48% | 69.66 | PORT PB | EVAC-PB |
| PC-A1 | | | 4 | | 1 | | | | | 0.085 | #12 | 500 | 0.24% | 69.83 | PORT PC | EVAC-PB |


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DATE: 12/11/2025

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SEAL




PROJECT
MVUSD ALTA MURRIETA FA MOD

39475 Whitewood Rd.
Murrieta, CA 92563

CLIENT
MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

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TITLE
FIRE ALARM VOLTAGE DROP AND BATTERY CALCULATIONS

SHEET
FA0.5


IF THIS SHEET IS NOT 30"x42", IT IS A REDUCED PRINT - SCALE ACCORDINGLY
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## PORTABLE. PG — PSE-10 Battery Calculation

### Secondary Power Source Requirements

| Device Type | Standby Current (amps) Qty | | Current Draw | | Total | Secondary Alarm Current (amps) Qty | | Current Draw | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Main Circuit Board | | | | | | | | | | |
| Choose EOLR used ↓ | | | | | | | | | | |
| 4.7k | 1 | X | 0.1560 | = | 0.1560 | 1 | X | 0.1850 | = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X | 0.1490 | = | 0.1490 | 1 | X | 0.1590 | = | 0.1590 |
| NAC / Output # 1 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 0.8120 | = | 0.8120 |
| NAC / Output # 2 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 3 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 4 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| Smoke Det. FSP-951 | 8 | X | 0.000045 | = | 0.0004 | 8 | X | 0.000045 | = | 0.0004 |
| Heat. Det. FST-951 | 8 | X | 0.000045 | = | 0.0004 | 8 | X | 0.0000 | = | 0.0000 |
| | | | Total Standby Load | | 0.3057 | | | Total Alarm Load | | 1.1564 |

## PSE-10 Battery Calculation

Note 1: You are **fully responsible for verifying these calculations**.
Note 2: You only need to make entries in the **yellow** cells

### Calculation in Total Sheet

| | | | | | |
|---|---|---|---|---|---|
| | | Required Standby Time in Hours | 24 Hours | | |
| Standby Load Current (Amps) | 0.3057 Amps | X | 24 | = | 7.337 AH |
| | | Required Alarm Time in Hours | 15 Minutes | | |
| Alarm Load Current (Amps) | 1.1564 Amps | X | 0.25 | = | 0.289 AH |
| | | | Total Current Load | | 7.63 AH |
| | *Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | Total Ampere Hours Required | | 9.15 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

## PSE-10 Circuit Detail

NAC / Output # 1

| Device | Qty | Non-Alarm Draw | | Total | Qty | Alarm Draw | | Total |
|---|---|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.066000 | = | |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.094000 | = | |
| 75cd SPSWL-CLR-ALERT | 4 | x 0.000000 | = | 0.000000 | 4 | x 0.158000 | = | 0.632000 |
| 2WATTS SPRK | 2 | x 0.000000 | = | 0.000000 | 2 | x 0.090000 | = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.202000 | = | |
| | | Total Standby Load | | 0.000000 | | Total Alarm Load | | 0.812000 |

## BLDG. PG - SPEAKER CIRCUIT CALCULATION

| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | TOTAL WATTS (AMPS) | WIRE SIZE AWG | MAX DISTANCE (FEET) | PERCENT VOLTAGE DROP (%) | END OF LINE VOLTS (V) | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| PG-A1 | | | 4 | | 2 | | | | | 0.114 | #12 | 450 | 0.29% | 69.80 | PORT. PG | EVAC-PG |

## BATTERY CALCULATION

### VOICE EVAC EXPANSION CABINET - PORTABLES PB

| EQUIPMENT | | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | SUPERVISORY CURRENT (IN AMPS) TOTAL | ALARM CURRENT (IN AMPS) UNIT | ALARM CURRENT (IN AMPS) TOTAL |
|---|---|---|---|---|---|---|
| DS-DB Audio Dist. Board | | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | | | 0.3600 | | 0.3600 | |
| .5 Watt Speaker | | | | | 0.0310 | |
| 1 Watt Speaker | | 4 | | | 0.0620 | 0.2480 |
| 2 Watt Speaker | | 2 | | | 0.1240 | 0.2480 |
| SUB-TOTALS (IN AMPS) | | | | 0.5800 | | 0.7560 |
| TIME FACTOR: 72 HOUR STANDBY | | | X 72 | | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 | |
| SUB-TOTALS (IN AMPHOURS): | | | | 41.7600 | | 0.1890 |
| STANDBY AMPHOURS | | 41.7600 | | | | |
| ALARM AMPHOURS | + | 0.1890 | | | | |
| SYSTEM AMPHOURS | = | 41.9490 | | | | |
| +20% DERATING | + | 8.3898 | | | | |
| TOTAL AMPHOURS REQUIRED | = | 50.3388 | | | | |
| TOTAL AMPHOURS PROVIDED | | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - | 50.3388 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = | 49.66 | | | | |

## FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. PG

24 VOLTS

| CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|
| | 0.043 | 0.063 | 0.107 | 0.148 | | | | | |
| PG-V1 | 0 | 0 | 4 | 0 | 0.428 | 6530 | 450 | 0.743 | 3.098% |

## PORTABLE. PD — PSE-10 Battery Calculation

### Secondary Power Source Requirements

| Device Type | Standby Current (amps) Qty | | Current Draw | | Total | Secondary Alarm Current (amps) Qty | | Current Draw | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Main Circuit Board | | | | | | | | | | |
| Choose EOLR used ↓ | | | | | | | | | | |
| 4.7k | 1 | X | 0.1560 | = | 0.1560 | 1 | X | 0.1850 | = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X | 0.1490 | = | 0.1490 | 1 | X | 0.1590 | = | 0.1590 |
| NAC / Output # 1 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 1.1280 | = | 1.1280 |
| NAC / Output # 2 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 3 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 4 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| Smoke Det. FSP-951 | 12 | X | 0.000045 | = | 0.0005 | 12 | X | 0.000045 | = | 0.0005 |
| Heat. Det. FST-951 | 12 | X | 0.000045 | = | 0.0005 | 12 | X | 0.0000 | = | 0.0000 |
| | | | Total Standby Load | | 0.3061 | | | Total Alarm Load | | 1.4725 |

## PSE-10 Battery Calculation

Note 1: You are **fully responsible for verifying these calculations**.
Note 2: You only need to make entries in the **yellow** cells

### Calculation in Total Sheet

| | | | | | |
|---|---|---|---|---|---|
| | | Required Standby Time in Hours | 24 Hours | | |
| Standby Load Current (Amps) | 0.3061 Amps | X | 24 | = | 7.346 AH |
| | | Required Alarm Time in Hours | 15 Minutes | | |
| Alarm Load Current (Amps) | 1.4725 Amps | X | 0.25 | = | 0.368 AH |
| | | | Total Current Load | | 7.71 AH |
| | *Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | Total Ampere Hours Required | | 9.26 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

## PSE-10 Circuit Detail

NAC / Output # 1

| Device | Qty | Non-Alarm Draw | | Total | Qty | Alarm Draw | | Total |
|---|---|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.066000 | = | |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.094000 | = | |
| 75cd SPSWL-CLR-ALERT | 6 | x 0.000000 | = | 0.000000 | 6 | x 0.158000 | = | 0.948000 |
| 2WATTS SPRK | 2 | x 0.000000 | = | 0.000000 | 2 | x 0.090000 | = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.202000 | = | |
| | | Total Standby Load | | 0.000000 | | Total Alarm Load | | 1.128000 |

## BATTERY CALCULATION

### VOICE EVAC EXPANSION CABINET - PORTABLES PD

| EQUIPMENT | | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | SUPERVISORY CURRENT (IN AMPS) TOTAL | ALARM CURRENT (IN AMPS) UNIT | ALARM CURRENT (IN AMPS) TOTAL |
|---|---|---|---|---|---|---|
| DS-DB Audio Dist. Board | | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | | 1 | | | 0.1300 | 0.1300 |
| DS-AMP 50 Watt Amp | | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | | | 0.3600 | | 0.3600 | |
| .5 Watt Speaker | | | | | 0.0310 | |
| 1 Watt Speaker | | 6 | | | 0.0620 | 0.3720 |
| 2 Watt Speaker | | 2 | | | 0.1240 | 0.2480 |
| SUB-TOTALS (IN AMPS) | | | | 0.5800 | | 0.7500 |
| TIME FACTOR: 72 HOUR STANDBY | | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 | |
| SUB-TOTALS (IN AMPHOURS): | | | | 41.7600 | | 0.1875 |
| STANDBY AMPHOURS | | 41.7600 | | | | |
| ALARM AMPHOURS | + | 0.1875 | | | | |
| SYSTEM AMPHOURS | = | 41.9475 | | | | |
| +20% DERATING | + | 8.3895 | | | | |
| TOTAL AMPHOURS REQUIRED | = | 50.3370 | | | | |
| TOTAL AMPHOURS PROVIDED | | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - | 50.3370 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = | 49.66 | | | | |

## FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. PD

24 VOLTS

| CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|
| | 0.043 | 0.063 | 0.107 | 0.148 | | | | | |
| PD-V1 | 0 | 0 | 6 | 0 | 0.642 | 6530 | 450 | 1.115 | 4.646% |

## PORT. PD - SPEAKER CIRCUIT CALCULATION

| CIRCUIT NO. | 1/4 W | 1/2 W | 1 W | 2 W | 2 W | 3W | 4W | 8W | 15W | TOTAL WATTS (AMPS) | WIRE SIZE AWG | MAX DISTANCE (FEET) | PERCENT VOLTAGE DROP (%) | END OF LINE VOLTS (V) | CIRCUIT LOCATION | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.004 | 0.007 | 0.014 | 0.029 | 0.029 | 0.043 | 0.057 | 0.114 | 0.214 | | | | | | | |
| PD-A1 | | | 6 | | 2 | | | | | 0.142 | #12 | 450 | 0.36% | 69.75 | PORT. PD | EVAC-PD |

## PORTABLE. PE — PSE-10 Battery Calculation

### Secondary Power Source Requirements

| Device Type | Standby Current (amps) Qty | | Current Draw | | Total | Secondary Alarm Current (amps) Qty | | Current Draw | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Main Circuit Board | | | | | | | | | | |
| Choose EOLR used ↓ | | | | | | | | | | |
| 4.7k | 1 | X | 0.1560 | = | 0.1560 | 1 | X | 0.1850 | = | 0.1850 |
| Main Circuit Board with ZNAC-PS Class A card | 1 | X | 0.1490 | = | 0.1490 | 1 | X | 0.1590 | = | 0.1590 |
| NAC / Output # 1 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 1.1280 | = | 1.1280 |
| NAC / Output # 2 | 1 | X | 0.0000 | = | 0.0000 | 1 | X | 0.4440 | = | 0.4440 |
| NAC / Output # 3 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| NAC / Output # 4 | | X | 0.0000 | = | 0.0000 | 0 | X | 0.0000 | = | 0.0000 |
| Smoke Det. FSP-951 | 16 | X | 0.000045 | = | 0.0007 | 16 | X | 0.000045 | = | 0.0007 |
| Heat. Det. FST-951 | 16 | X | 0.000045 | = | 0.0007 | 16 | X | 0.0000 | = | 0.0000 |
| | | | Total Standby Load | | 0.3064 | | | Total Alarm Load | | 1.9167 |

## PSE-10 Battery Calculation

Note 1: You are **fully responsible for verifying these calculations**.
Note 2: You only need to make entries in the **yellow** cells

### Calculation in Total Sheet

| | | | | | |
|---|---|---|---|---|---|
| | | Required Standby Time in Hours | 24 Hours | | |
| Standby Load Current (Amps) | 0.3064 Amps | X | 24 | = | 7.355 AH |
| | | Required Alarm Time in Hours | 15 Minutes | | |
| Alarm Load Current (Amps) | 1.9167 Amps | X | 0.25 | = | 0.479 AH |
| | | | Total Current Load | | 7.83 AH |
| | *Multiply by the Derating Factor | | 1.2 | = | x 1.20 |
| | | | Total Ampere Hours Required | | 9.40 AH |

| Recommended Batteries: | BAT-12180 - 18AH Batteries |
|---|---|

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

## PSE-10 Circuit Detail

NAC / Output # 1

| Device | Qty | Non-Alarm Draw | | Total | Qty | Alarm Draw | | Total |
|---|---|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.066000 | = | |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.094000 | = | |
| 75cd SPSWL-CLR-ALERT | 6 | x 0.000000 | = | 0.000000 | 6 | x 0.158000 | = | 0.948000 |
| 2WATTS SPRK | 2 | x 0.000000 | = | 0.000000 | 2 | x 0.090000 | = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.202000 | = | |
| | | Total Standby Load | | 0.000000 | | Total Alarm Load | | 1.128000 |

NAC / Output # 2

| Device | Qty | Non-Alarm Draw | | Total | Qty | Alarm Draw | | Total |
|---|---|---|---|---|---|---|---|---|
| 15cd SPSWL-CLR-ALERT | 4 | x 0.000000 | = | 0.000000 | 4 | x 0.066000 | = | 0.264000 |
| 30cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.094000 | = | |
| 75cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.158000 | = | |
| 2WATTS SPRK | 2 | x 0.000000 | = | 0.000000 | 2 | x 0.090000 | = | 0.180000 |
| 110cd SPSWL-CLR-ALERT | 0 | x 0.000000 | = | | 0 | x 0.202000 | = | |
| | | Total Standby Load | | 0.000000 | | Total Alarm Load | | 0.444000 |

## BATTERY CALCULATION

### VOICE EVAC EXPANSION CABINET - PORTABLES PE

| EQUIPMENT | | QUANTITY | SUPERVISORY CURRENT (IN AMPS) UNIT | SUPERVISORY CURRENT (IN AMPS) TOTAL | ALARM CURRENT (IN AMPS) UNIT | ALARM CURRENT (IN AMPS) TOTAL |
|---|---|---|---|---|---|---|
| DS-DB Audio Dist. Board | | 1 | 0.3550 | 0.3550 | | |
| AMPS-24 Power Supply | | 2 | | | 0.1300 | 0.2600 |
| DS-AMP 50 Watt Amp | | 1 | 0.1250 | 0.1250 | | |
| DS-BDA Backup Amp | | 1 | 0.1000 | 0.1000 | | |
| DVC-RPU Remote LOC | | 1 | 0.3600 | 0.3600 | 0.3600 | 0.3600 |
| .5 Watt Speaker | | 4 | | | 0.0310 | 0.1240 |
| 1 Watt Speaker | | 6 | | | 0.0620 | 0.3720 |
| 2 Watt Speaker | | 3 | | | 0.1240 | 0.3720 |
| SUB-TOTALS (IN AMPS) | | | | 0.9400 | | 1.4880 |
| TIME FACTOR: 72 HOUR STANDBY | | | | X 72 | | |
| 15 MINUTES IN ALARM | | | | | X 0.250 | |
| SUB-TOTALS (IN AMPHOURS): | | | | 67.6800 | | 0.3720 |
| STANDBY AMPHOURS | | 67.6800 | | | | |
| ALARM AMPHOURS | + | 0.3720 | | | | |
| SYSTEM AMPHOURS | = | 68.0520 | | | | |
| +20% DERATING | + | 13.6104 | | | | |
| TOTAL AMPHOURS REQUIRED | = | 81.6624 | | | | |
| TOTAL AMPHOURS PROVIDED | | 100.00 | | | | |
| LESS AMPHOURS REQUIRED | - | 81.6624 | | | | |
| AVAILABLE SPARE AMPHOUR CAPACITY | = | 18.34 | | | | |

## FIRE ALARM CIRCUIT VOLTAGE LINE LOSS - BLDG. PE

24 VOLTS

| CIRCUIT NUMBER | DEVICE LOAD IN AMPS SPK/STB 15cd | DEVICE LOAD IN AMPS SPK/STB 30cd | DEVICE LOAD IN AMPS SPK/STB 75cd | DEVICE LOAD IN AMPS SPK/STB 110cd | TOTAL DEVICE LOAD IN AMPS | CONDUCTOR CROSS-SECTIONAL AREA IN CIRCULAR MILLS | SEGMENT LENGTH IN FEET | VOLTAGE LOSS IN VOLT | LINE LOSS IN % |
|---|---|---|---|---|---|---|---|---|---|
| | 0.043 | 0.063 | 0.107 | 0.148 | | | | | |
| E-V1 | 0 | 0 | 6 | 0 | 0.642 | 6530 | 450 | 1.115 | 4.646% |
| E-V2 | 4 | 0 | 0 | 0 | 0.172 | 6530 | 450 | 0.299 | 1.245% |

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ELECTRICAL
STATE OF CALIFORNIA

PROJECT
MVUSD ALTA MURRIETA FA MOD

39475 Whitewood Rd.
Murrieta, CA 92563

CLIENT
MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

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TITLE
FIRE ALARM VOLTAGE DROP AND BATTERY CALCULATIONS

SHEET
FA0.6

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0 1/4" 1/2" 1"

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. REMOVE AND PULL WIRING BACK TO THE SOURCE.

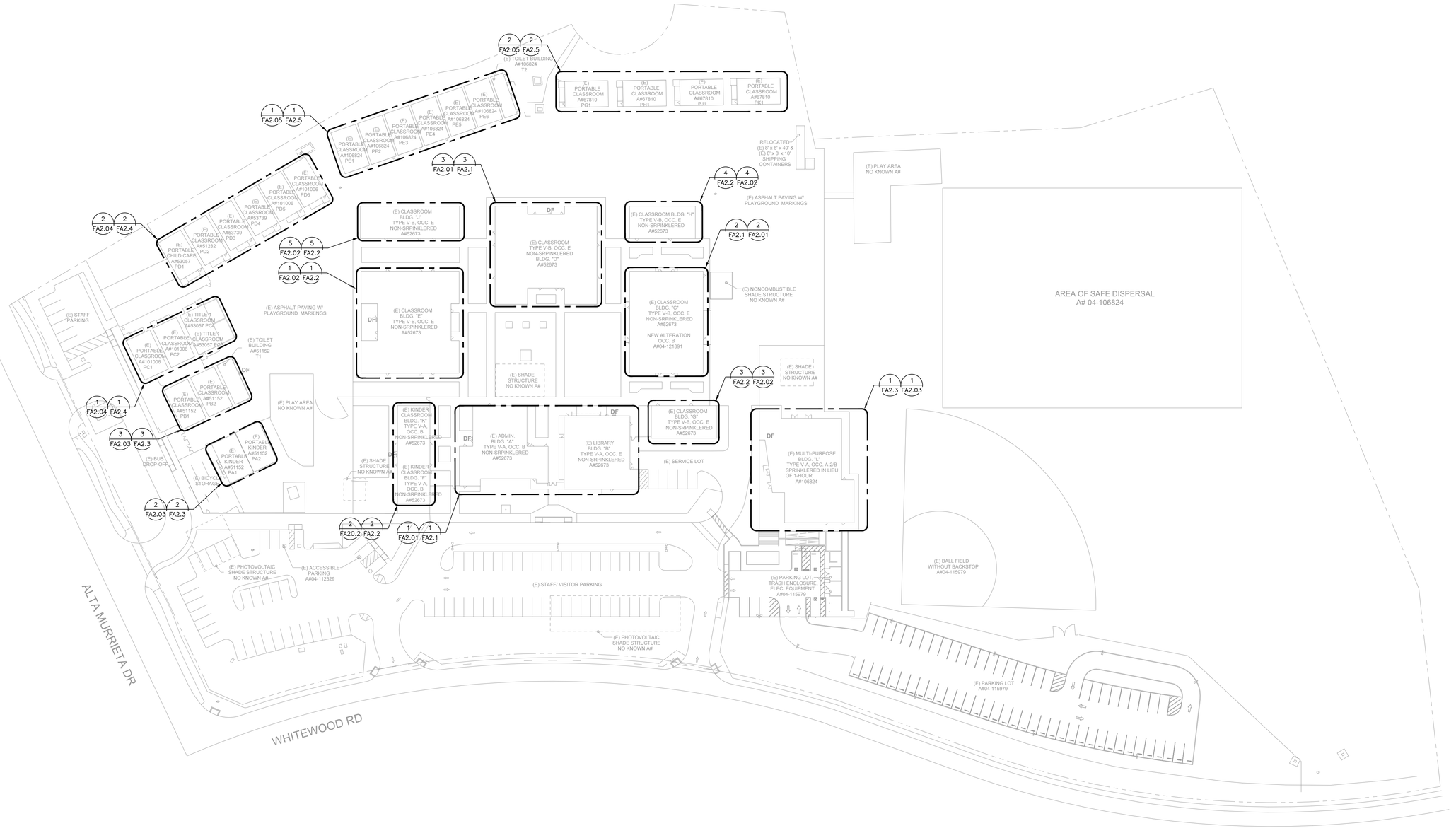
C. ALL EXISTING POWER SUPPLY, CONTROL PANEL AND COPPER TO BE REMOVED AND SALVAGED. COORDINATE WITH DISTRICT.

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E. CONTRACTOR SHALL PROVIDE BLANK COVERS FOR ALL EXISTING DEVICES REMOVED IF NOT BEING USE FOR NEW DEVICES.

F. CONTRACTOR SHALL PROVIDE ACCESS PANEL FOR ALL DEVICES ABOVE CEILING IN ALL HARDLID CEILINGS.

F. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE REGULATIONS (CCR).




1 FIRE ALARM OVERALL SITE PLAN
SCALE 1" = 40' - 0"

PLAN NORTH

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SEAL

REGISTERED PROFESSIONAL ENGINEER
EDMOND A. SALAS
No. E18809
Exp. 8/30/27
ELECTRICAL
STATE OF CALIFORNIA

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TITLE
FIRE ALARM
OVERALL SITE PLAN

SHEET
FA1.1

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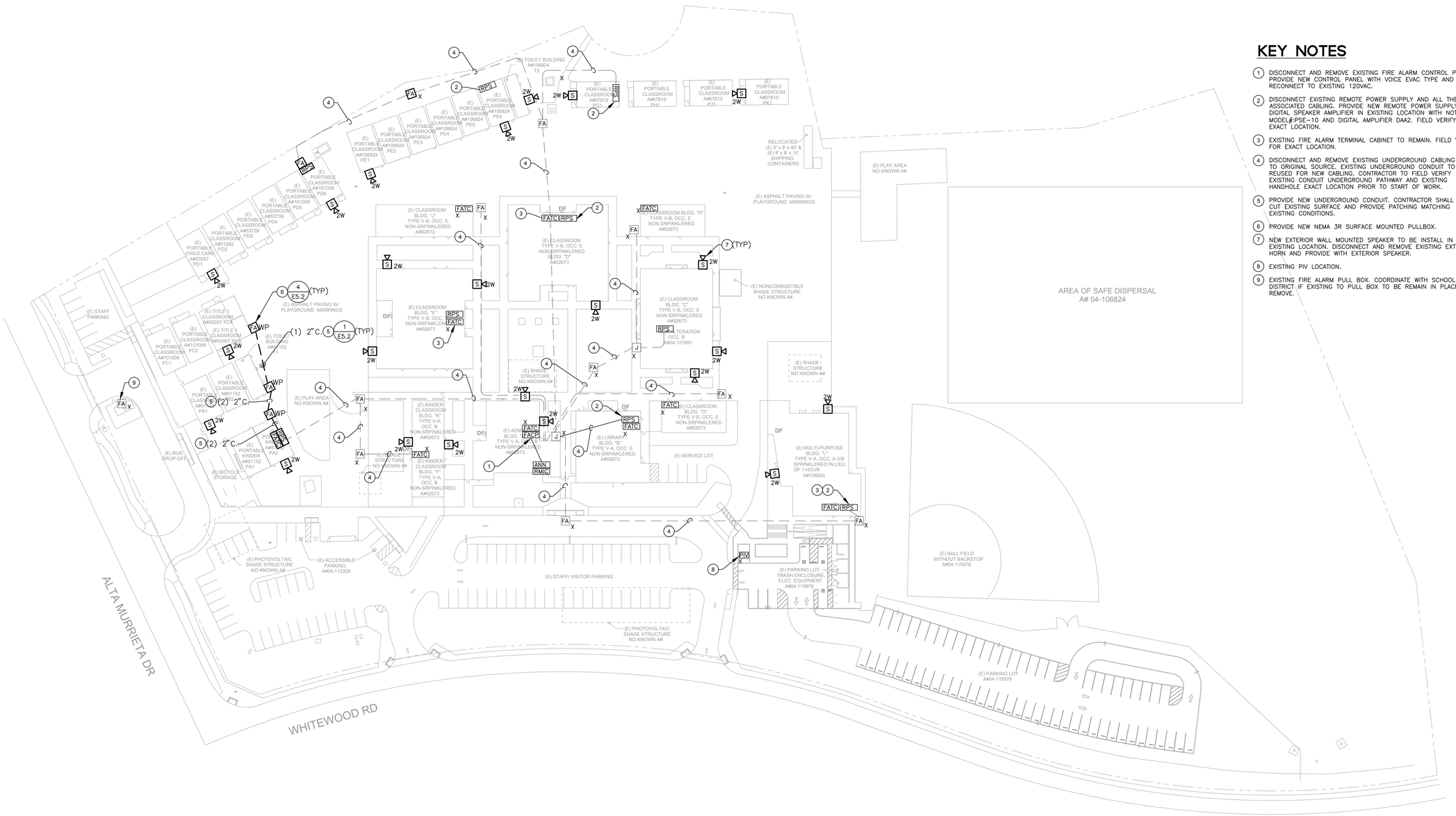
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F. CONTRACTOR SHALL PROVIDE ACCESS PANEL FOR ALL DEVICES ABOVE CEILING IN ALL HARDLID CEILINGS.

G. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE REGULATIONS (CCR).

## KEY NOTES

1. DISCONNECT AND REMOVE EXISTING FIRE ALARM CONTROL PANEL. PROVIDE NEW CONTROL PANEL WITH VOICE EVAC TYPE AND RECONNECT TO EXISTING 120VAC.
2. DISCONNECT EXISTING REMOTE POWER SUPPLY AND ALL THE ASSOCIATED CABLING. PROVIDE NEW REMOTE POWER SUPPLY AND DIGITAL SPEAKER AMPLIFIER IN EXISTING LOCATION WITH NOTIFIER, MODEL#:PSE-10 AND DIGITAL AMPLIFIER DAA2. FIELD VERIFY FOR EXACT LOCATION.
3. EXISTING FIRE ALARM TERMINAL CABINET TO REMAIN. FIELD VERIFY FOR EXACT LOCATION.
4. DISCONNECT AND REMOVE EXISTING UNDERGROUND CABLING BACK TO ORIGINAL SOURCE. EXISTING UNDERGROUND CONDUIT TO BE REUSED FOR NEW CABLING. CONTRACTOR TO FIELD VERIFY EXISTING CONDUIT UNDERGROUND PATHWAY AND EXISTING HANDHOLE EXACT LOCATION PRIOR TO START OF WORK.
5. PROVIDE NEW UNDERGROUND CONDUIT. CONTRACTOR SHALL SAW CUT EXISTING SURFACE AND PROVIDE PATCHING MATCHING EXISTING CONDITIONS.
6. PROVIDE NEW NEMA 3R SURFACE MOUNTED PULLBOX.
7. NEW EXTERIOR WALL MOUNTED SPEAKER TO BE INSTALL IN THE EXISTING LOCATION. DISCONNECT AND REMOVE EXISTING EXTERIOR HORN AND PROVIDE WITH EXTERIOR SPEAKER.
8. EXISTING PIV LOCATION.
9. EXISTING FIRE ALARM PULL BOX. COORDINATE WITH SCHOOL DISTRICT IF EXISTING TO PULL BOX TO BE REMAIN IN PLACE OR REMOVE.




1 FIRE ALARM OVERALL SITE PLAN
SCALE 1" = 40' - 0"

PLAN NORTH


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EDMOD A. SALAS JR. C18800 Exp. 6/30/27 ELECTRICAL STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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39475 Whitewood Rd.
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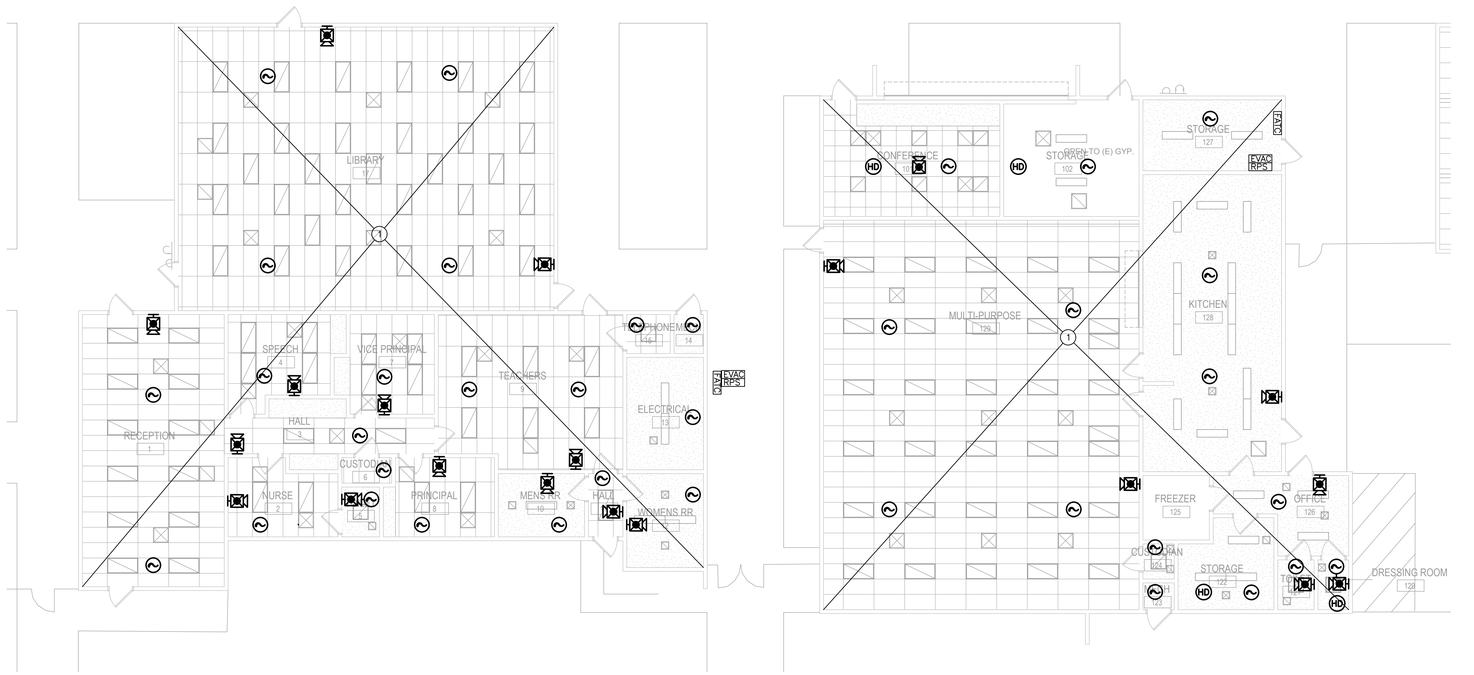
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TITLE
FIRE ALARM
OVERALL SITE PLAN

SHEET
FA1.2

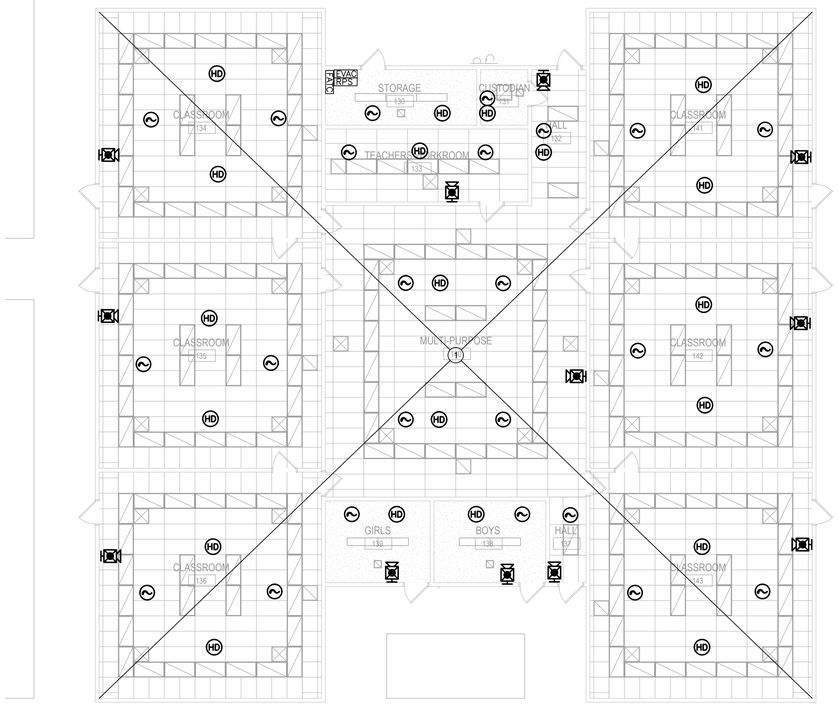

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1 FIRE ALARM FLOOR PLAN BLDG. "A" & "B" - DEMOLITION

SCALE 1/8" = 1' - 0"

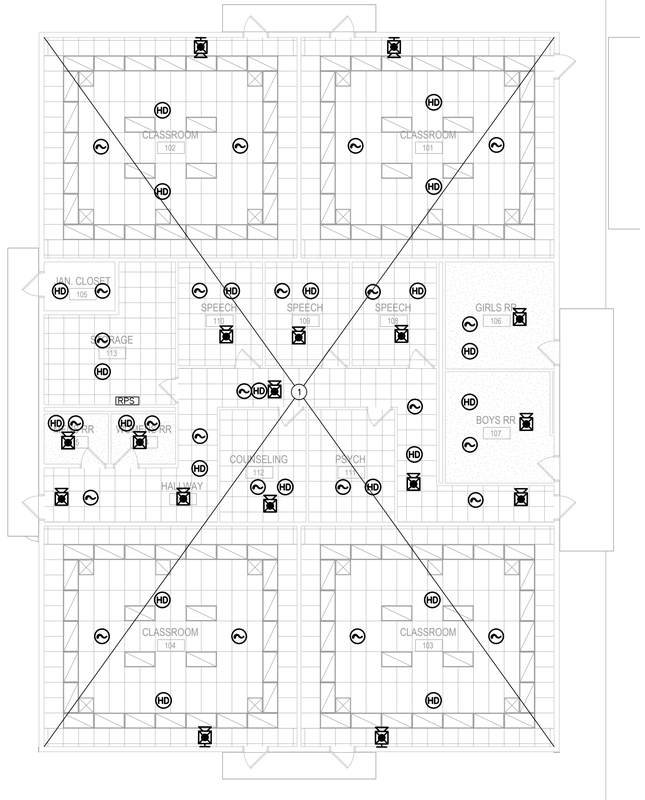
PLAN NORTH




3 FIRE ALARM FLOOR PLAN BLDG. "D" - DEMOLITION

SCALE 1/8" = 1' - 0"

PLAN NORTH




2 FIRE ALARM FLOOR PLAN BLDG. "C" - DEMOLITION

SCALE 1/8" = 1' - 0"

PLAN NORTH

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TITLE
FIRE ALARM
BLDG'S A, B, C & D
DEMOLITION PLANS

SHEET
FA2.01

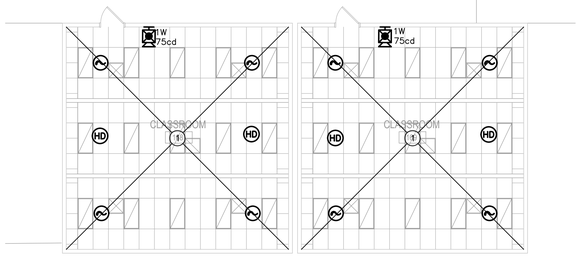
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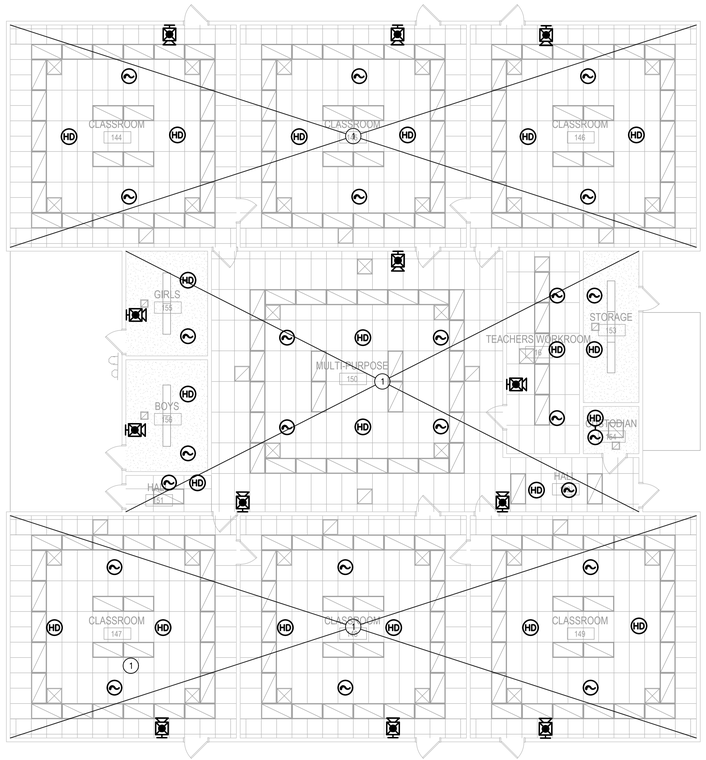
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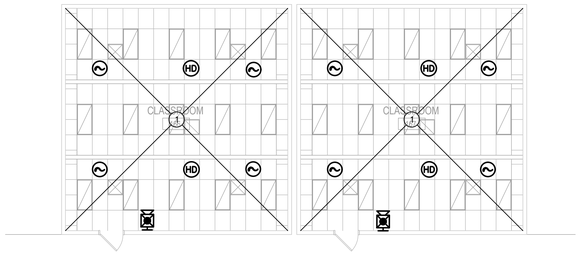



## 3 FIRE ALARM FLOOR PLAN BLDG. "G" - DMEOLITION

SCALE 1/8" = 1'-0"

PLAN NORTH




## 4 FIRE ALARM FLOOR PLAN BLDG. "H" - DEMOLITION

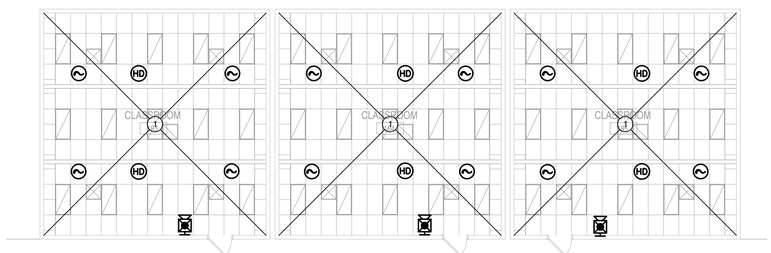
SCALE 1/8" = 1'-0"

PLAN NORTH

## 1 FIRE ALARM FLOOR PLAN BLDG. "E" - DEMOLITION

SCALE 1/8" = 1'-0"

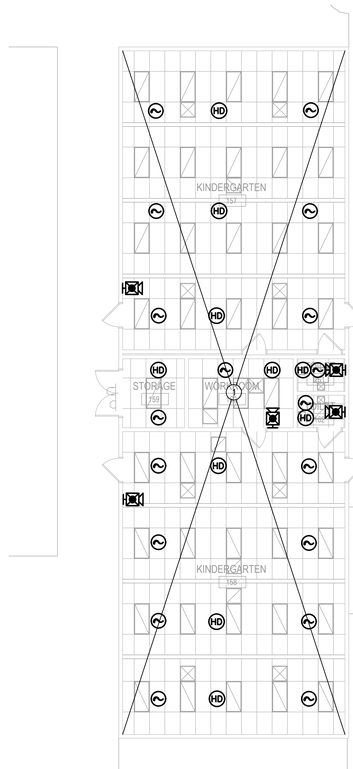
PLAN NORTH




## 5 FIRE ALARM FLOOR PLAN BLDG. "J" - DEMOLITION

SCALE 1/8" = 1'-0"

PLAN NORTH




## 2 FIRE ALARM FLOOR PLAN BLDG. "F" & "K" - DEMOLITION

SCALE 1/8" = 1'-0"

PLAN NORTH

## GENERAL NOTES

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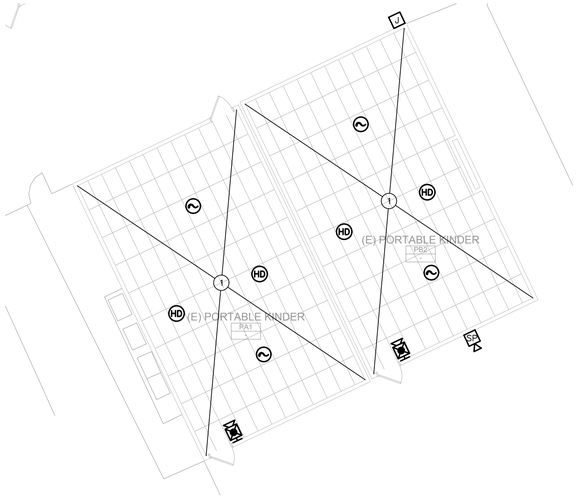
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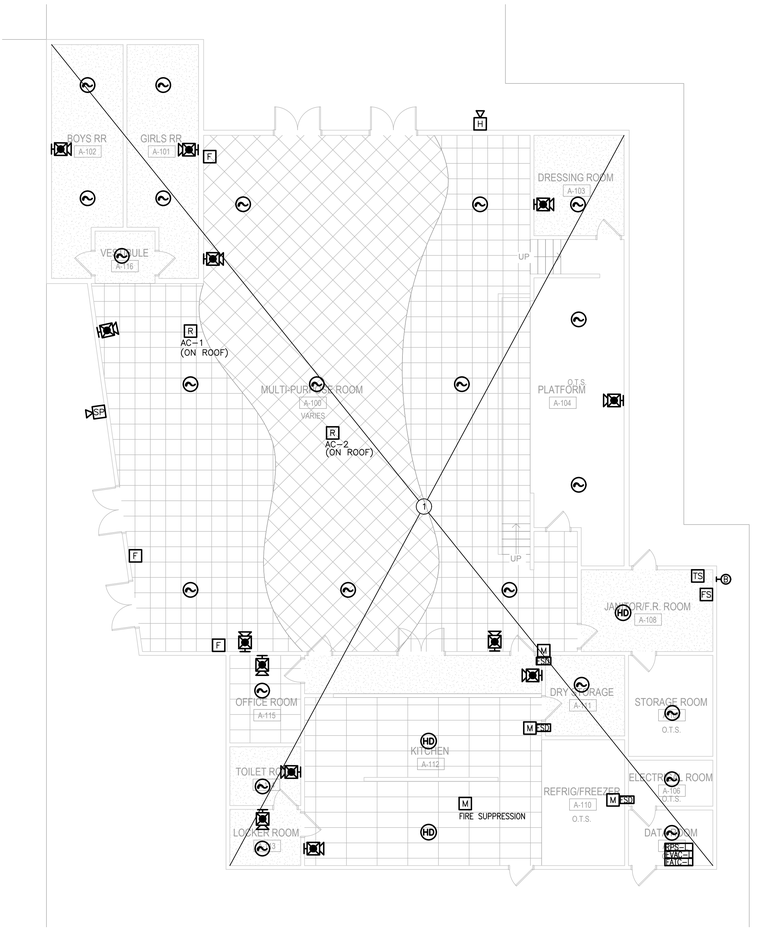
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TITLE
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BLDG'S E, F, G, H ,J & K
DEMOLITION PLANS

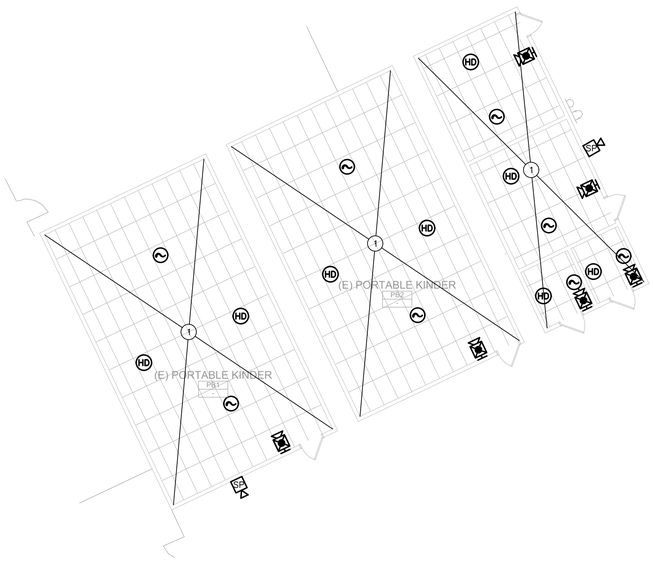
SHEET
FA2.02




2 FIRE ALARM FLOOR PLAN PORTABLE KINDER "PA21" & "PB2" - DEMOLITION
SCALE 1/8" = 1'-0"




1 FIRE ALARM FLOOR PLAN BLDG. "L" - DEMOLITION
SCALE 1/8" = 1'-0"




3 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM "PB1" AND 'PB2" - DEMOLITION
SCALE 1/8" = 1'-0"

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SEAL

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EDMOND A. SALAS
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PROJECT
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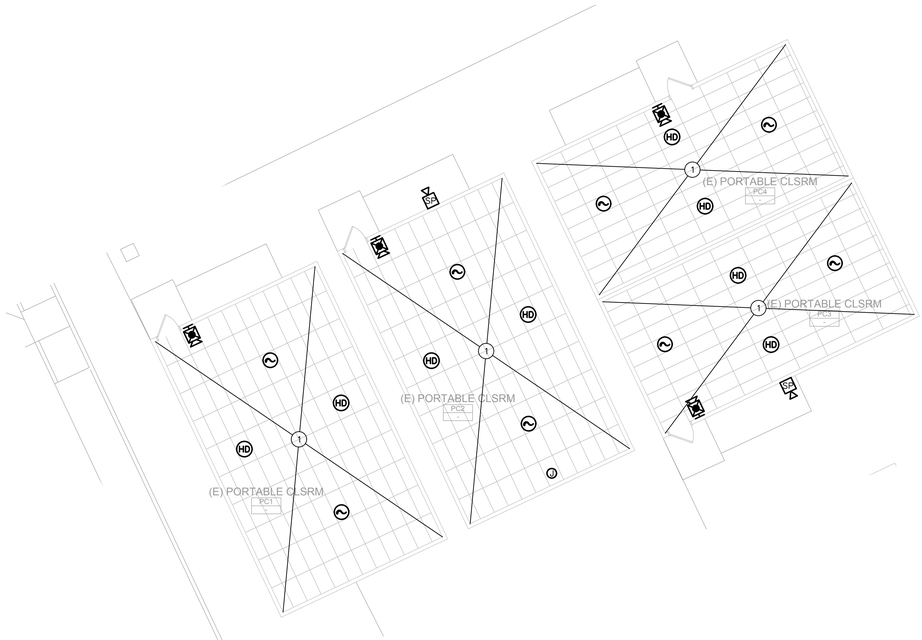
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TITLE
FIRE ALARM
BLDG'S K, L, PORTABLE KINDER & PORTABLE CLASSRM - DEMOLITION PLANS

SHEET
FA2.03

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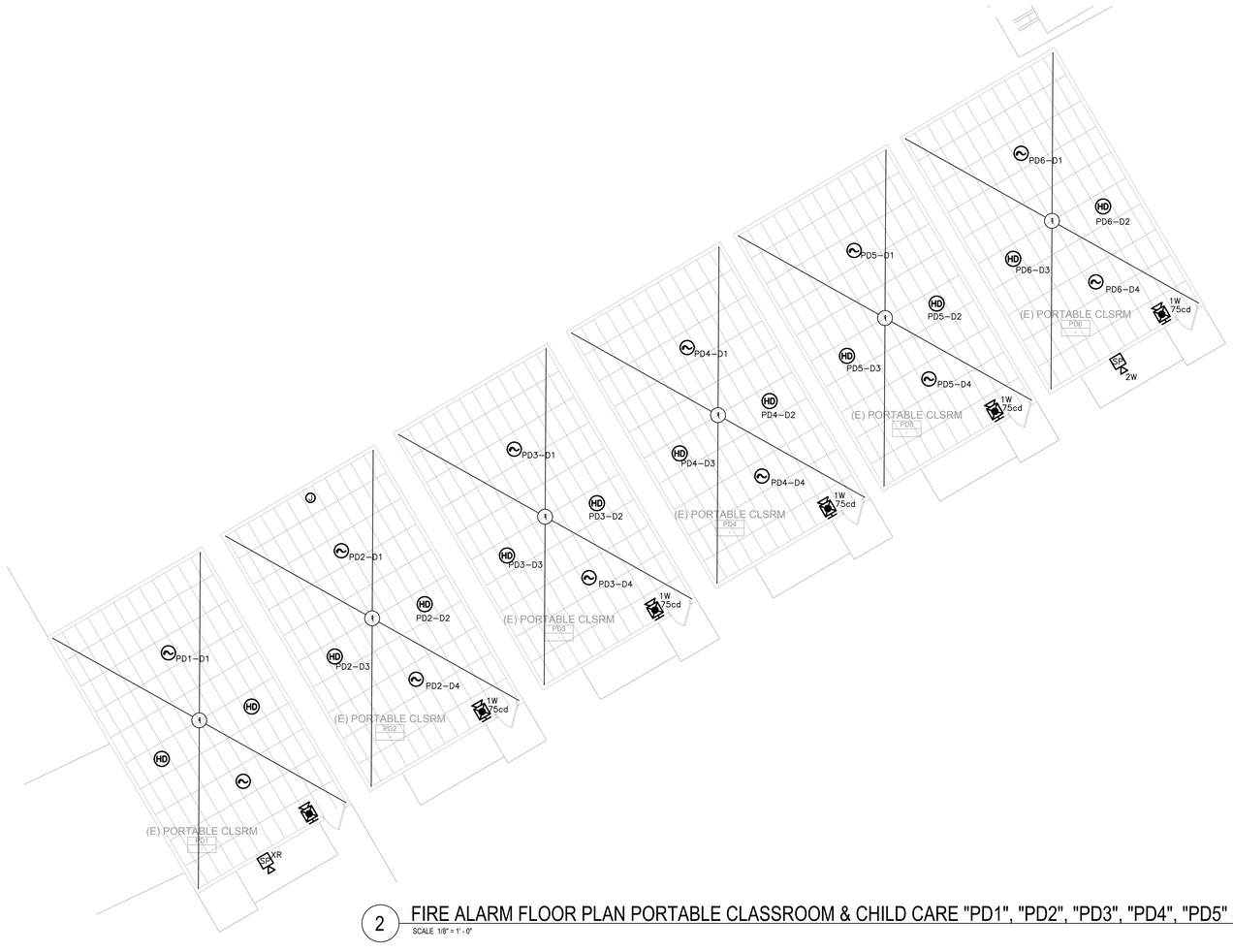
2"
1"
0 1/4" 1/2"
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1 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM & TITLE CLASSROOM "PC1", "PC2", "PC3" & "PC4" - DEMOLTION

SCALE 1/8" = 1' - 0"

PLAN NORTH




2 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM & CHILD CARE "PD1", "PD2", "PD3", "PD4", "PD5" & "PD6" - DEMOLITION PLAN

SCALE 1/8" = 1' - 0"

PLAN NORTH

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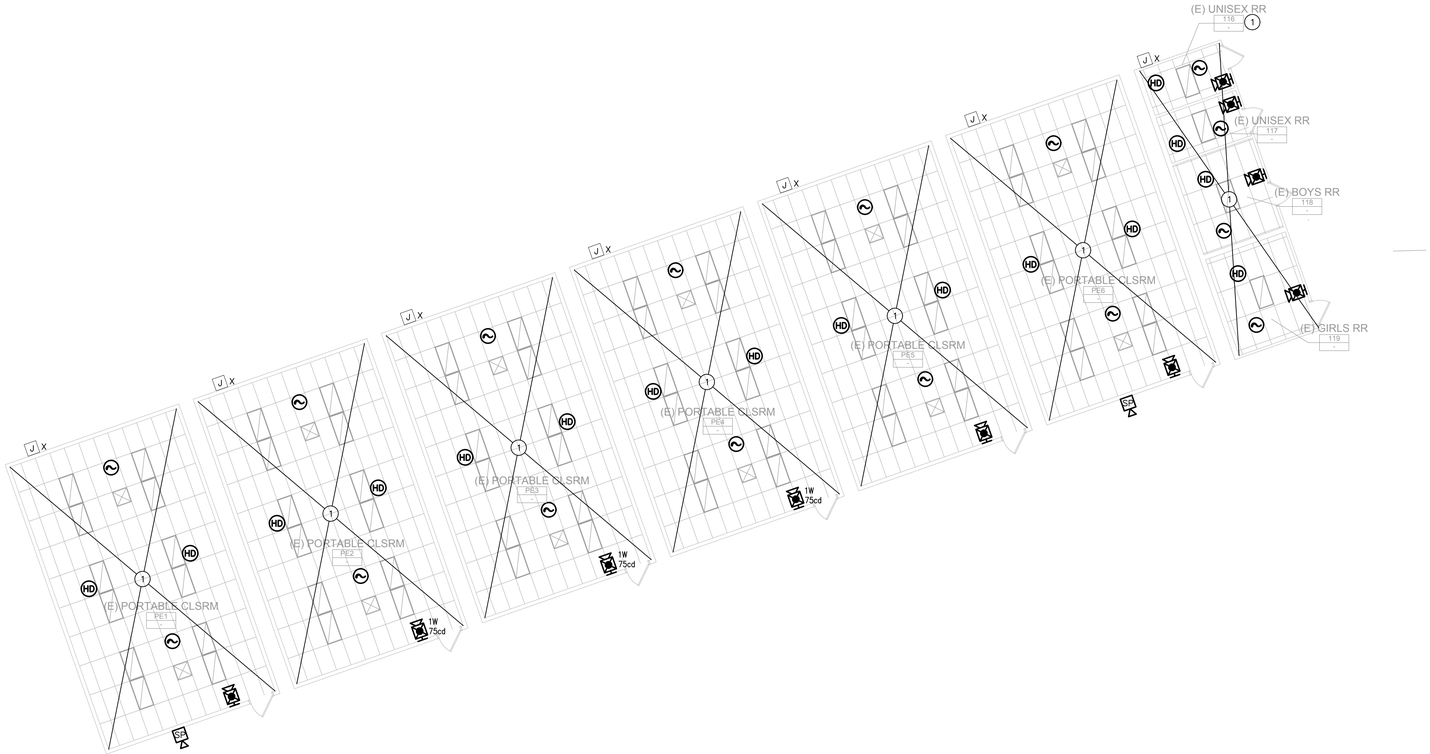
TITLE
FIRE ALARM
PORTABLE CLASSROOM &
CHILD CARE - DEMOLITION
PLANS

SHEET
FA2.04

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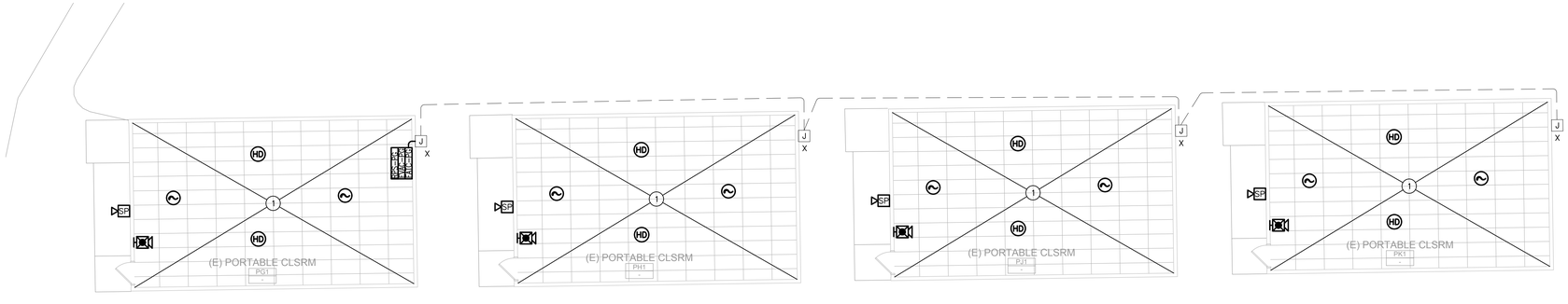
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## 1 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM - DEMOLITION

SCALE 1/8" = 1' - 0"

PLAN NORTH




## 2 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM - DEMOLITION

SCALE 1/8" = 1' - 0"

PLAN NORTH

# GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. REMOVE AND PULL WIRING BACK TO THE SOURCE.

C. ALL EXISTING POWER SUPPLY CONTROL PANEL AND COPPER WIRE TO BE REMOVED AND SALVAGED. COORDINATE WITH DISTRICT.

D. ALL EXISTING UNDERGROUND AND EXPOSED CONDUITS TO BE REUSE. VERIFY EXISTING CONDITION PRIOR TO START OF WORK.

E. CONTRACTOR SHALL PROVIDE BLANK COVERS FOR ALL EXISTING DEVICES REMOVED IF NOT BEING USE FOR NEW DEVICES.

F. CONTRACTOR SHALL PROVIDE ACCESS PANEL FOR ALL DEVICES ABOVE CEILING IN ALL HARDLID CEILINGS.

# KEY NOTES

(1) DISCONNECT AND REMOVE ALL EXISTING FIRE ALARM DEVICES, APPLIANCES, AND ALL THE ASSOCIATED WIRING IN THE AREAS INDICATED FOR DEMOLITION BACK TO ITS ORIGINAL SOURCE. EXISTING CONDUITS AND WIRING TO REMAIN SHALL BE PROTECTED IN PLACE DURING DEMOLITION AND CONSTRUCTION ACTIVITIES. COORDINATE AND RETURN ALL DISCONNECTED DEVICES AND APPLIANCES TO THE DISTRICT.

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EDMOND A. SALAS
No. E18809
Exp. 8/30/27
ELECTRICAL
STATE OF CALIFORNIA

PROJECT

MVUSD ALTA MURRIETA FA MOD

39475 Whitewood Rd.
Murrieta, CA 92563

CLIENT

MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

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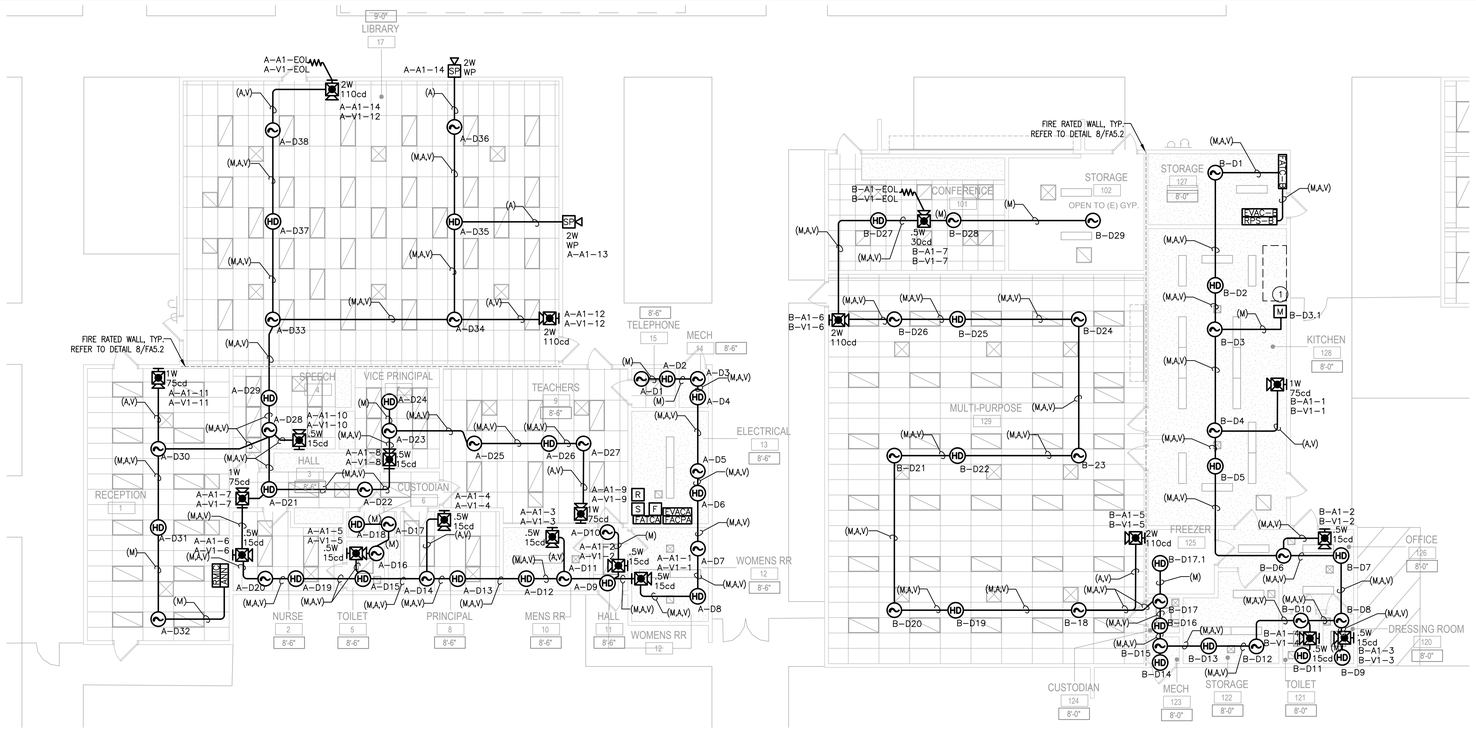
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TITLE

FIRE ALARM
PORTABLE CLASSROOM
DEMOLITION PLANS

SHEET

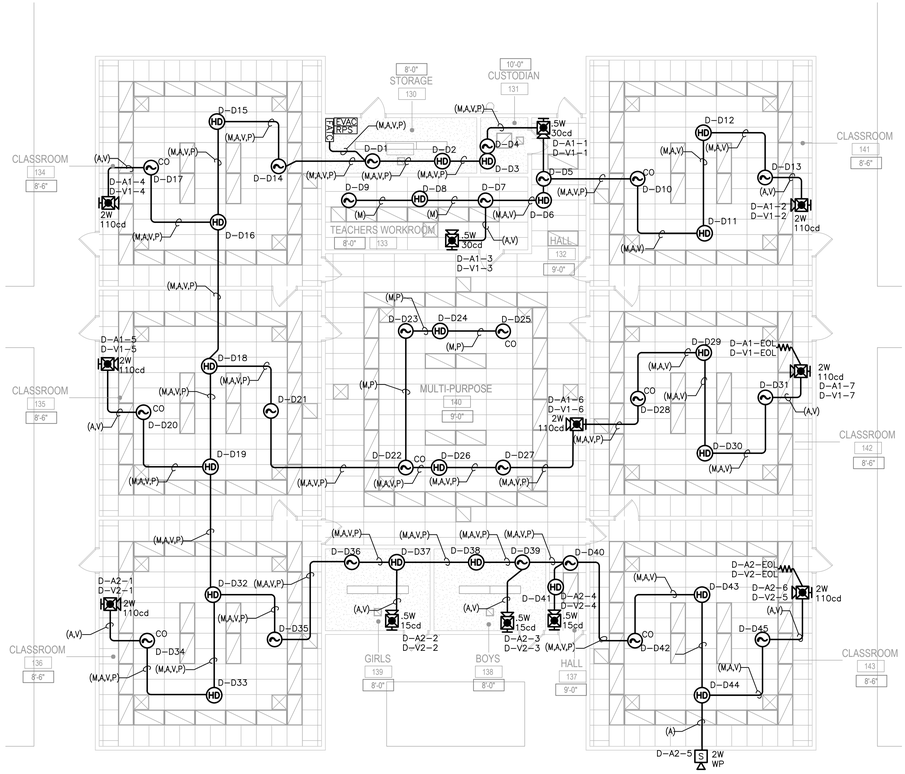
FA2.05




## 1 FIRE ALARM FLOOR PLAN BLDG. "A" & "B" - NEW

SCALE 1/8" = 1'-0"

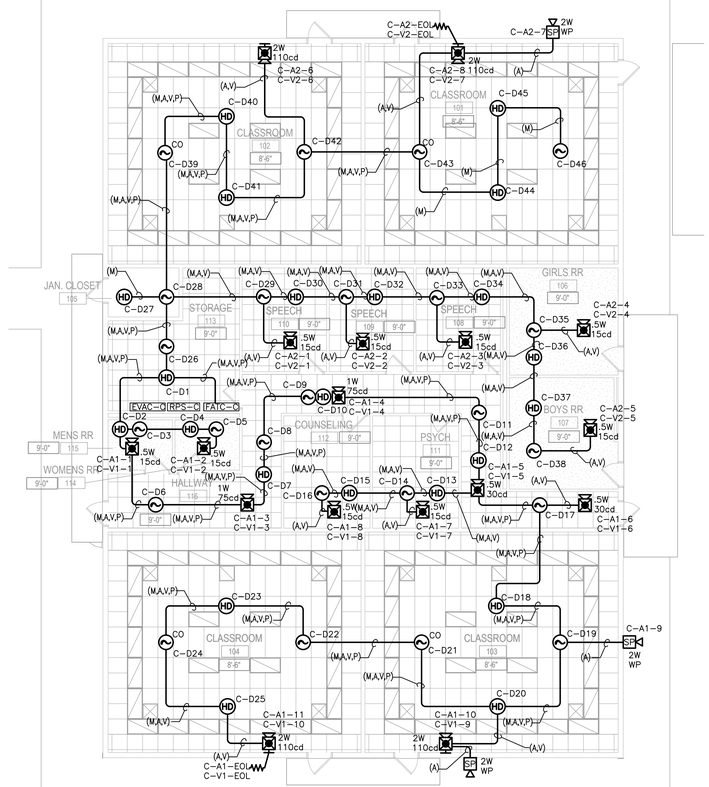
PLAN NORTH




## 3 FIRE ALARM FLOOR PLAN BLDG. "D" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH




## 2 FIRE ALARM FLOOR PLAN BLDG. "C" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. PROVIDE ALL FIRE ALARM CABLING WITH MINIMUM 3/4" CONDUIT.

C. CONTRACTOR SHALL PROVIDE AND INSTALL ACCESS PANEL IN NON-ACCESSIBLE CEILINGS WHERE REQUIRED TO ACCESS EQUIPMENT IN CONCEALED CEILING SPACE.

D. HEAT DETECTORS TO BE INSTALLED ABOVE CEILING SPACE, UNLESS OTHERWISE NOTED.

E. ALL DRAWINGS ARE DIAGRAMMATICALLY AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CAPTURE THE INTEND OF THE DRAWINGS.

F. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE REGULATIONS (CCR).

## KEY NOTES

(1) CONNECT TO EXISTING FIRE SUPPRESSION SYSTEM.

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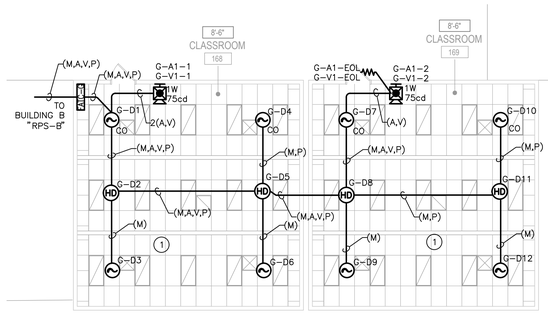
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FIRE ALARM
BLDG'S A, B, C & D
NEW PLANS

SHEET
FA2.1

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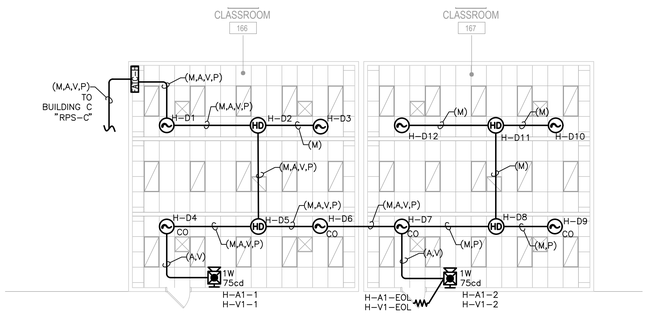
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## 3 FIRE ALARM FLOOR PLAN BLDG. "G" - NEW

SCALE 1/8" = 1'-0"

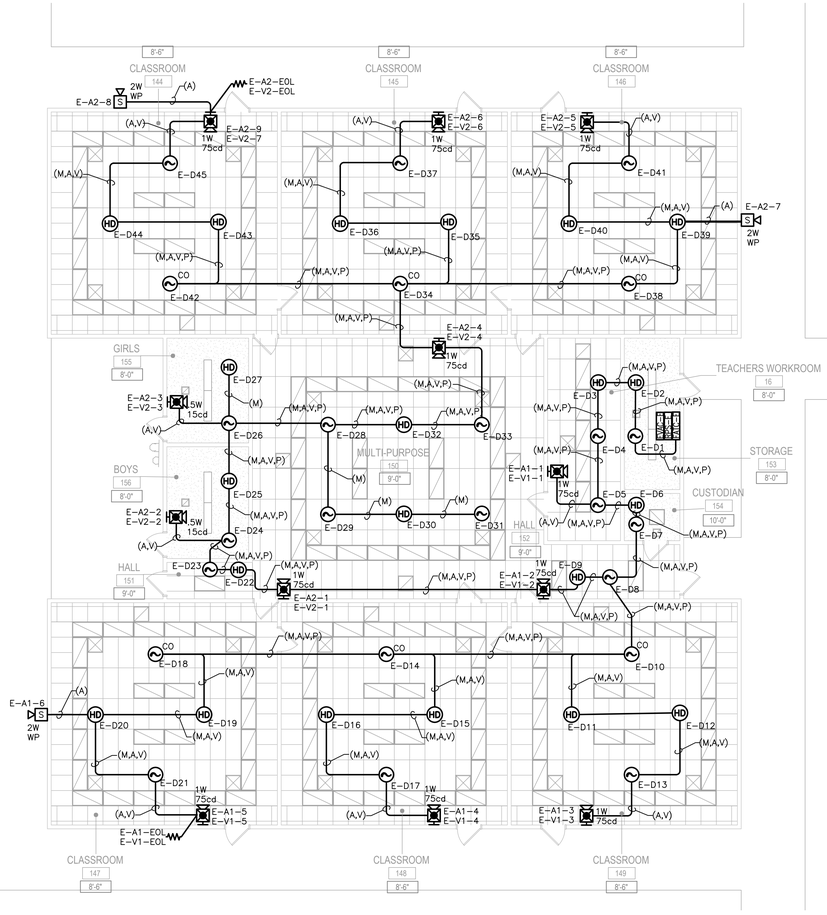
PLAN NORTH




## 4 FIRE ALARM FLOOR PLAN BLDG. "H" - NEW

SCALE 1/8" = 1'-0"

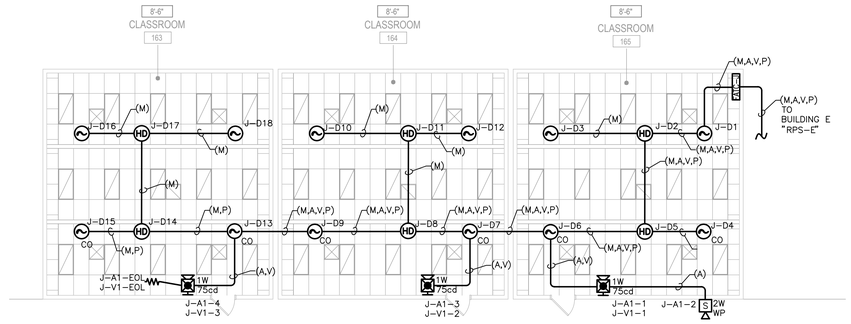
PLAN NORTH




## 1 FIRE ALARM FLOOR PLAN BLDG. "E" - NEW

SCALE 1/8" = 1'-0"

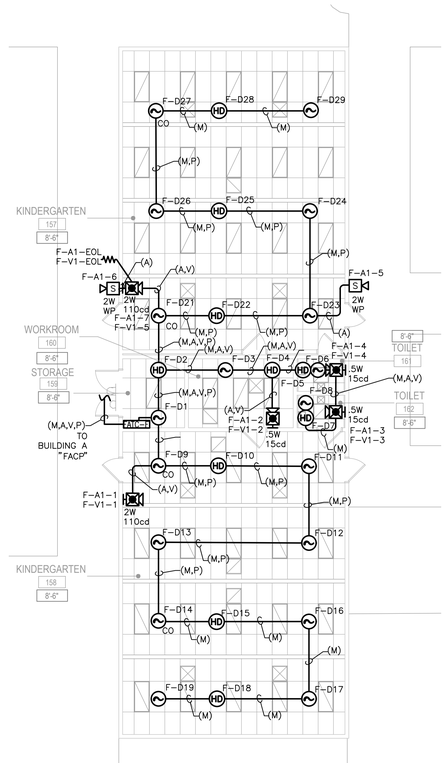
PLAN NORTH




## 5 FIRE ALARM FLOOR PLAN BLDG. "J" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH




## 2 FIRE ALARM FLOOR PLAN BLDG. "F" & "K" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. PROVIDE ALL FIRE ALARM CABLING WITH MINIMUM 3/4" CONDUIT.

C. CONTRACTOR SHALL PROVIDE AND INSTALL ACCESS PANEL IN NON-ACCESSIBLE CEILINGS WHERE REQUIRED TO ACCESS EQUIPMENT IN CONCEALED CEILING SPACE.

D. HEAT DETECTORS TO BE INSTALLED ABOVE CEILING SPACE, UNLESS OTHERWISE NOTED.

E. ALL DRAWINGS ARE DIAGRAMMATICALLY AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CAPTURE THE INTEND OF THE DRAWINGS.

F. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE REGULATIONS (CCR).

## KEY NOTES

(1) –

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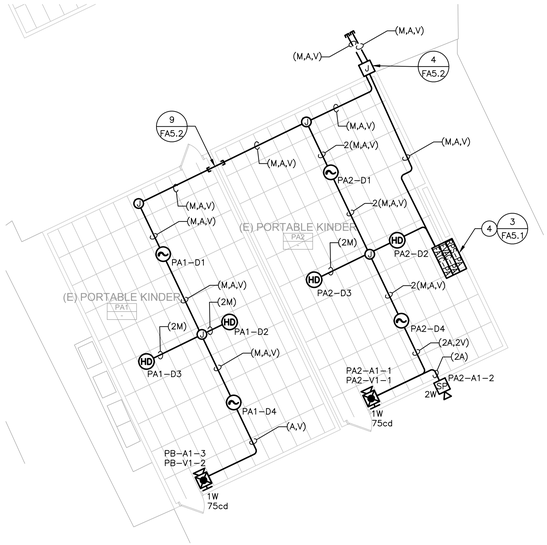
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TITLE
FIRE ALARM
BLDG'S E, F, G, H ,J & K
NEW PLANS

SHEET
FA2.2

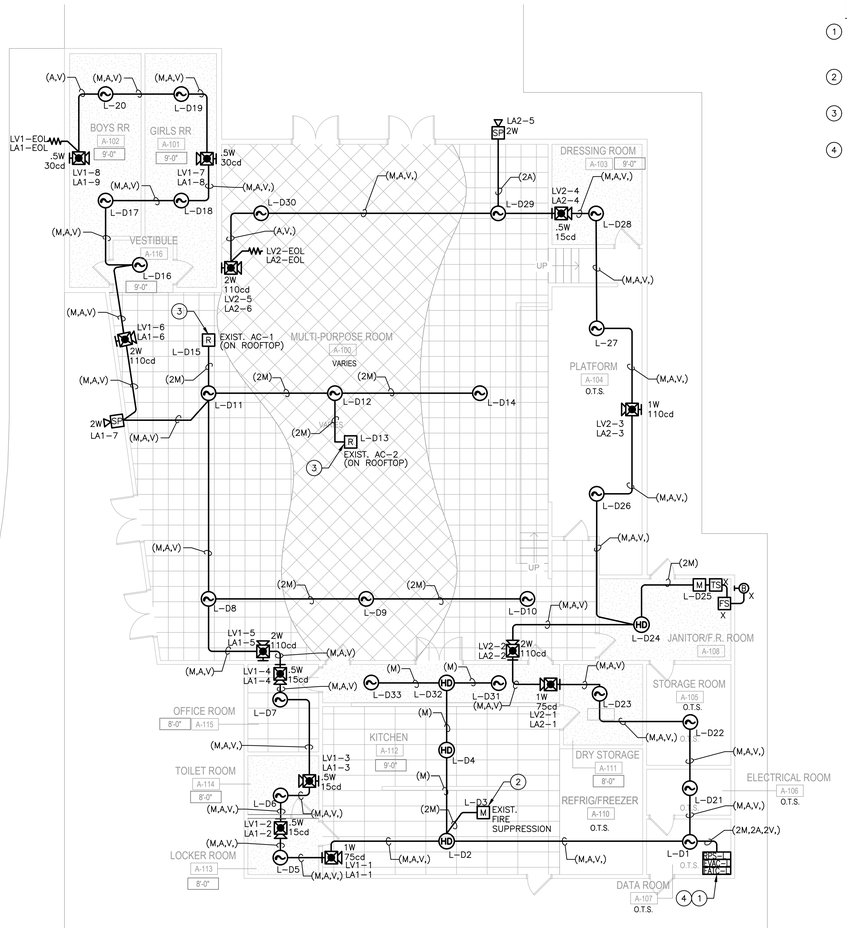
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2 FIRE ALARM FLOOR PLAN PORTABLE KINDER "PA21" & "PB2" - NEW

SCALE 1/8" = 1'-0"

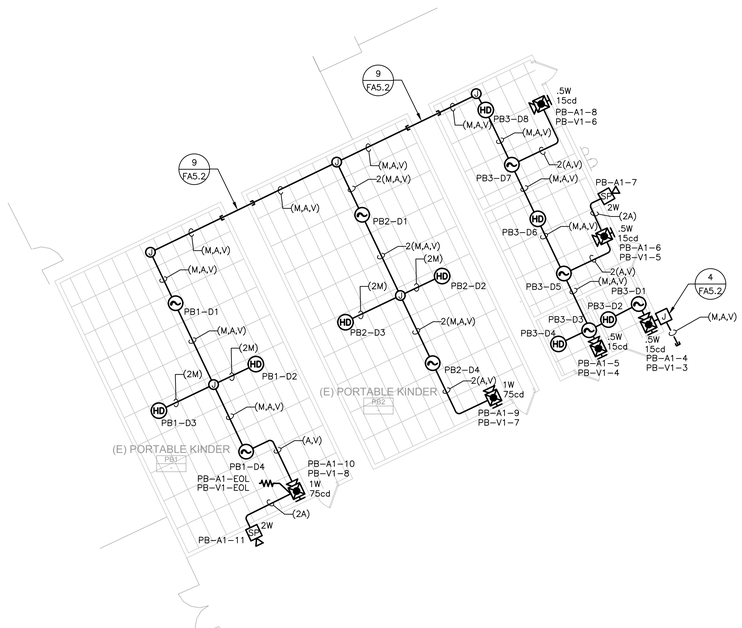
PLAN NORTH




1 FIRE ALARM FLOOR PLAN BLDG. "L" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH




3 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM "PB1" AND 'PB2" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. PROVIDE ALL FIRE ALARM CABLING WITH MINIMUM 3/4" CONDUIT.

C. CONTRACTOR SHALL PROVIDE AND INSTALL ACCESS PANEL IN NON-ACCESSIBLE CEILINGS WHERE REQUIRED TO ACCESS EQUIPMENT IN CONCEALED CEILING SPACE.

D. HEAT DETECTORS TO BE INSTALLED ABOVE CEILING SPACE. UNLESS OTHERWISE NOTED.

E. ALL DRAWINGS ARE DIAGRAMMATICALLY AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CAPTURE THE INTEND OF THE DRAWINGS.

F. ALL EXISTING CONDUITS TO BE REUSE AND CONTRACTOR SHALL PROVIDE NEW CONDUITS AS NEEDED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDUITS CONDITION PRIOR TO REUSE.

G. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).

## KEY NOTES

1. DISCONNECT AND REMOVE EXISTING FIRE ALARM REMOTE POWER SUPPLY. PROVIDE NEW REMOTE POWER SUPPLY AND EVAC VOICE AMPLIFIER CONTROL PANEL IN EXISTING LOCATION. CONNECT TO EXISTING 120VAC.
2. PROVIDE NEW MONITORING MODULE AND MAKE CONNECTION TO EXISTING FIRE SUPPRESSION SYSTEM. FIELD VERIFY FOR EXACT LOCATION.
3. PROVIDE NEW RELAY MODULE AND MAKE CONNECTION TO EXISTING HVAC ON THE ROOFTOP FOR SHUTDOWN AND RESET. FIELD VERIFY FOR EXACT LOCATION.
4. PROVIDE NEW FIRE ALARM REMOTE POWER SUPPLY, VOICE EVAC AMPLIFIER, AND TERMINAL CABINET. RECONNECT TO EXISTING DEDICATED 120VAC WITH LOCK-ON RED HAND CIRCUIT BREAKER.

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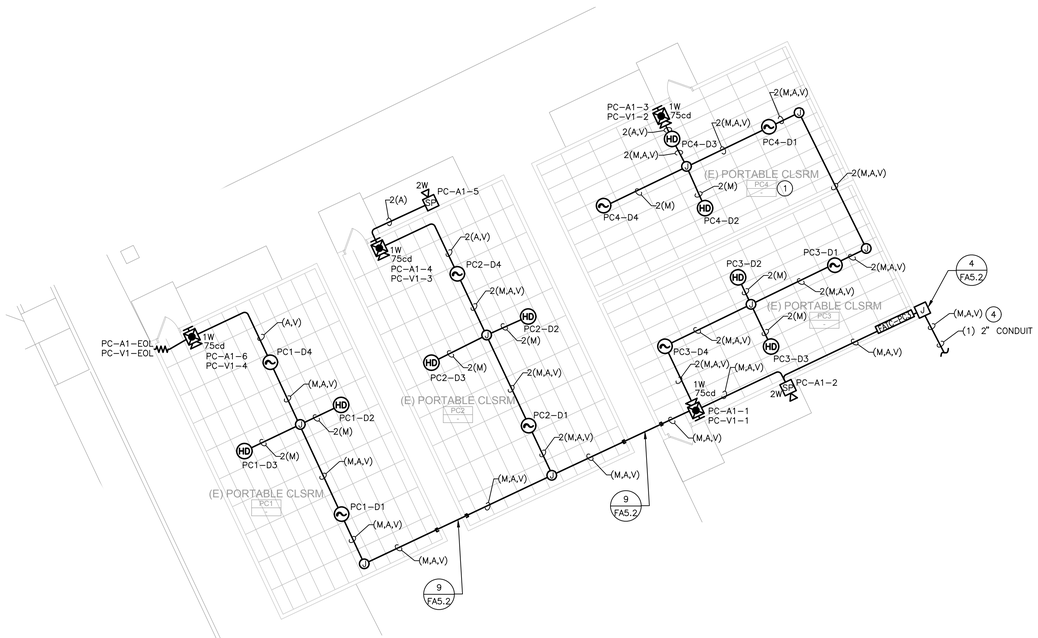
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FIRE ALARM
BLDG'S K, L, PORTABLE
KINDER & PORTABLE
CLASSRM - NEW PLANS

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FA2.3

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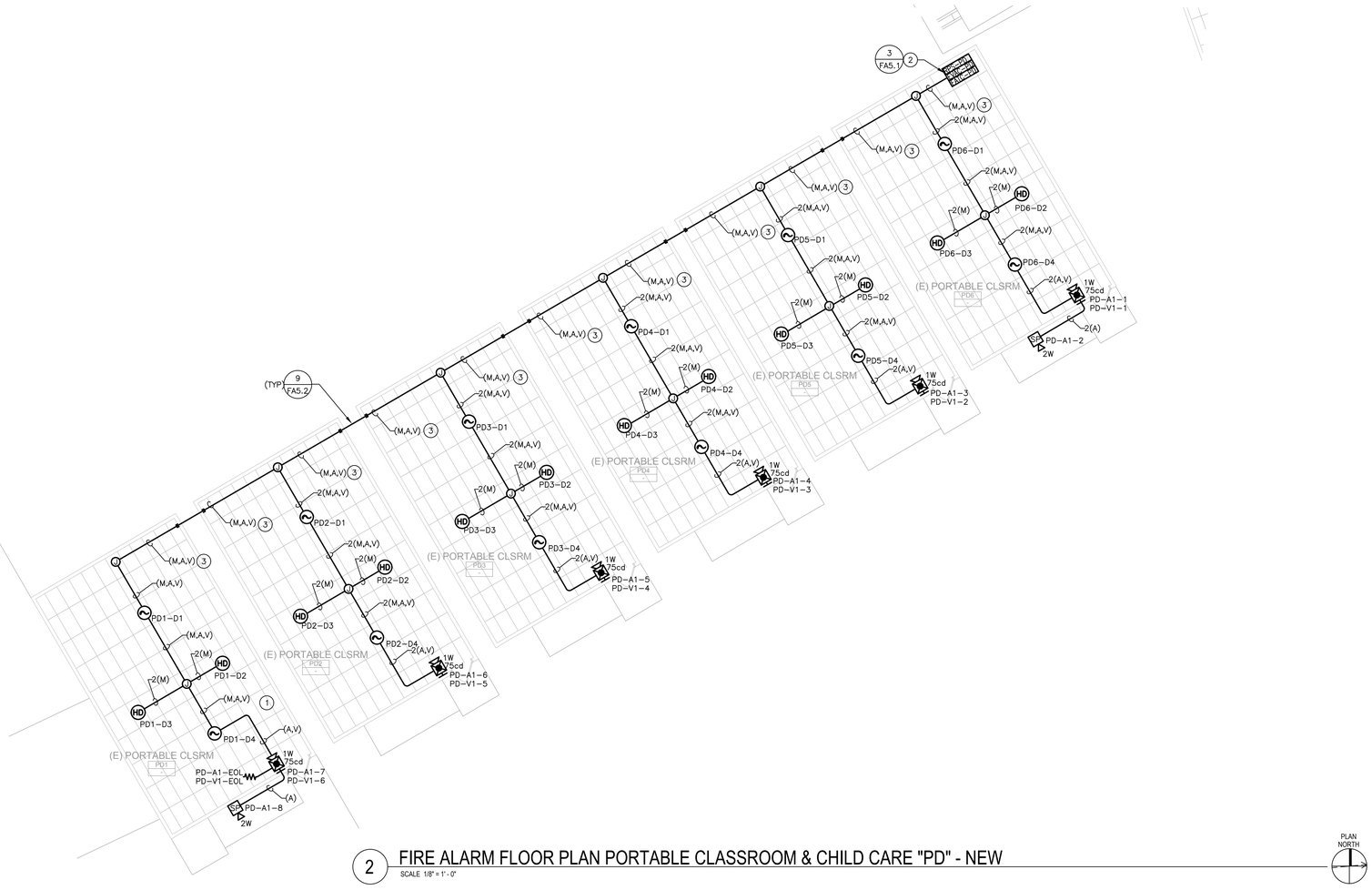
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1 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM & TITLE CLASSROOM "PC1", "PC2", "PC3" & "PC4" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH




2 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM & CHILD CARE "PD" - NEW

SCALE 1/8" = 1'-0"

PLAN NORTH

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. PROVIDE ALL FIRE ALARM CABLING WITH MINIMUM 3/4" CONDUIT.

C. CONTRACTOR SHALL PROVIDE AND INSTALL ACCESS PANEL IN NON-ACCESSIBLE CEILINGS WHERE REQUIRED TO ACCESS EQUIPMENT IN CEILING SPACE.

D. HEAT DETECTORS TO BE INSTALLED ABOVE CEILING SPACE. UNLESS OTHERWISE NOTED.

E. ALL DRAWINGS ARE DIAGRAMMATICALLY AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CAPTURE THE INTEND OF THE DRAWINGS.

F. ALL EXISTING CONDUITS TO BE REUSE AND CONTRACTOR SHALL PROVIDE NEW CONDUITS AS NEEDED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDUITS CONDITION PRIOR TO REUSE.

G. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).

## KEY NOTES

1. DISCONNECT AND REMOVE EXISTING FIRE ALARM REMOTE POWER SUPPLY. PROVIDE NEW REMOTE POWER SUPPLY AND EVAC VOICE AMPLIFIER CONTROL PANEL IN EXISTING LOCATION. CONNECT TO EXISTING 120VAC.
2. PROVIDE NEW FIRE ALARM REMOTE POWER SUPPLY, VOICE EVAC AMPLIFIER, AND TERMINAL CABINET. PROVIDE DEDICATED 120VAC WITH LOCK-ON RED HAND CIRCUIT BREAKER.
3. PROVIDE NEW CABLING IN NEW SURFACE MOUNTED 1" CONDUIT.
4. ROUTE TO NEW REMOTE POWER SUPPLY LOCATED IN PORTABLE CLASSROOM PB2.

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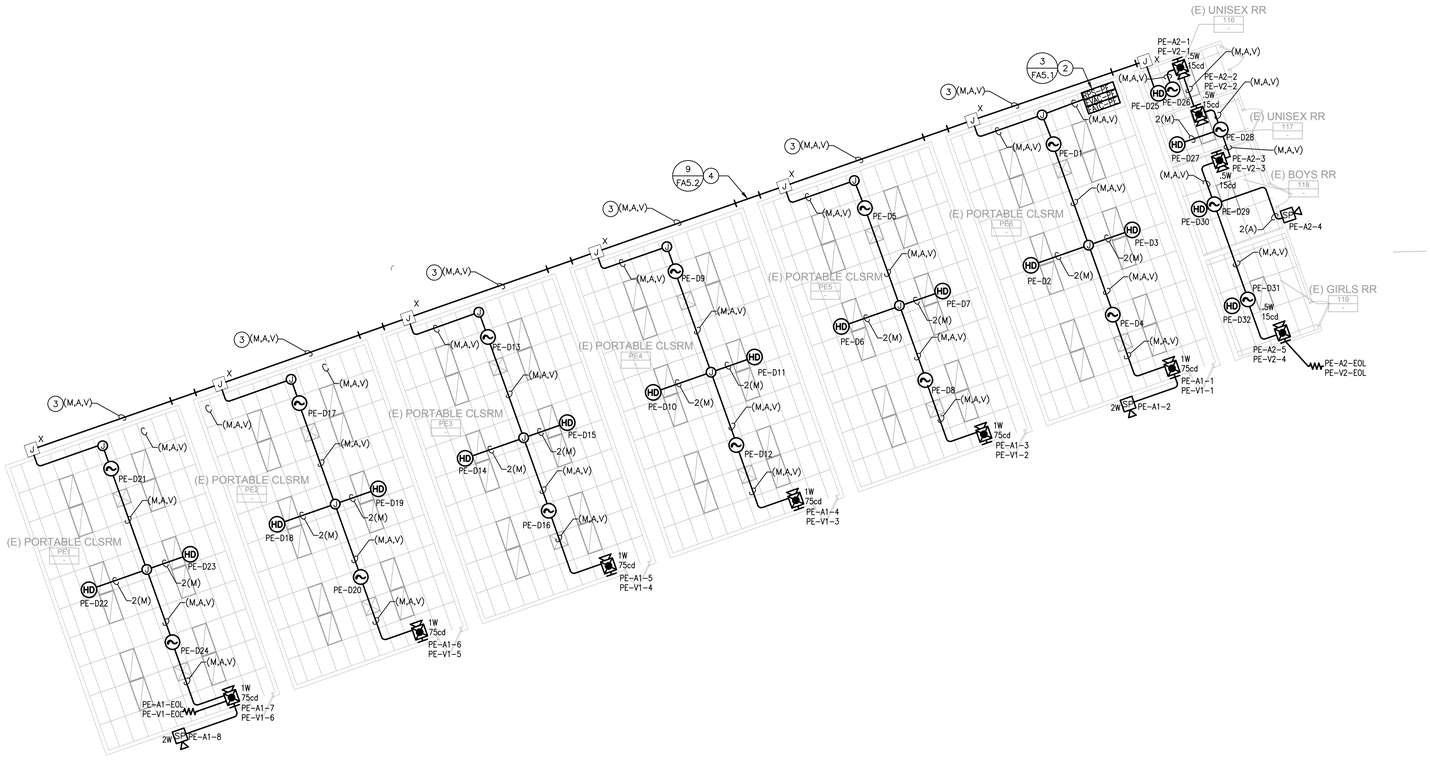
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TITLE
FIRE ALARM PORTABLE CLASSROOM & CHILD CARE - NEW PLANS

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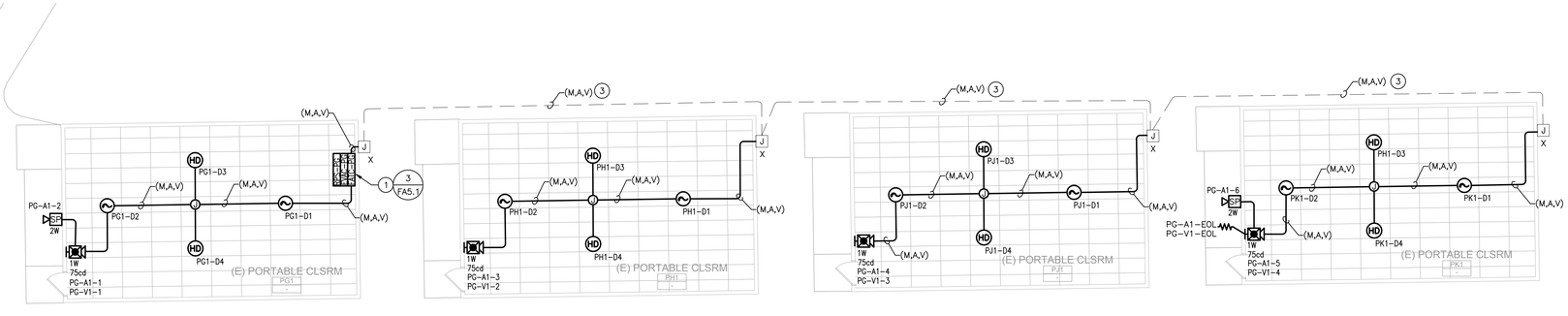
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## 1 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM - NEW

SCALE 1/8" = 1' - 0"

PLAN NORTH




## 2 FIRE ALARM FLOOR PLAN PORTABLE CLASSROOM - NEW

SCALE 1/8" = 1' - 0"

PLAN NORTH

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. PROVIDE ALL FIRE ALARM CABLING WITH MINIMUM 3/4" CONDUIT.

C. CONTRACTOR SHALL PROVIDE AND INSTALL ACCESS PANEL IN NON-ACCESSIBLE CEILINGS WHERE REQUIRED TO ACCESS EQUIPMENT IN CONCEALED CEILING SPACE.

D. HEAT DETECTORS TO BE INSTALLED ABOVE CEILING SPACE. UNLESS OTHERWISE NOTED.

E. ALL DRAWINGS ARE DIAGRAMMATICALLY AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CAPTURE THE INTEND OF THE DRAWINGS.

F. ALL EXISTING CONDUITS TO BE REUSE AND CONTRACTOR SHALL PROVIDE NEW CONDUITS AS NEEDED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDUITS CONDITION PRIOR TO REUSE.

G. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).

## KEY NOTES

1. DISCONNECT AND REMOVE EXISTING FIRE ALARM REMOTE POWER SUPPLY. PROVIDE NEW REMOTE POWER SUPPLY AND EVAC VOICE AMPLIFIER CONTROL PANEL IN EXISTING LOCATION. CONNECT TO EXISTING 120VAC.
2. PROVIDE NEW FIRE ALARM REMOTE POWER SUPPLY, VOICE EVAC AMPLIFIER, AND TERMINAL CABINET. PROVIDE DEDICATED 120VAC WITH LOCK-ON RED HAND CIRCUIT BREAKER.
3. PROVIDE NEW CABLING IN EXISTING CONDUIT. FIELD VERIFY FOR EXACT ROUTING OF THE EXISTING CONDUITS.
4. PROVIDE SEISMIC FLEX CONDUIT BETWEEN PORTABLES.

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Exp. 6/30/27
ELECTRICAL
STATE OF CALIFORNIA

PROJECT

MVUSD ALTA MURRIETA FA MOD

39475 Whitewood Rd.
Murrieta, CA 92563

CLIENT

MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

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| CLIENT PROJECT NO: | 700.00.007 |
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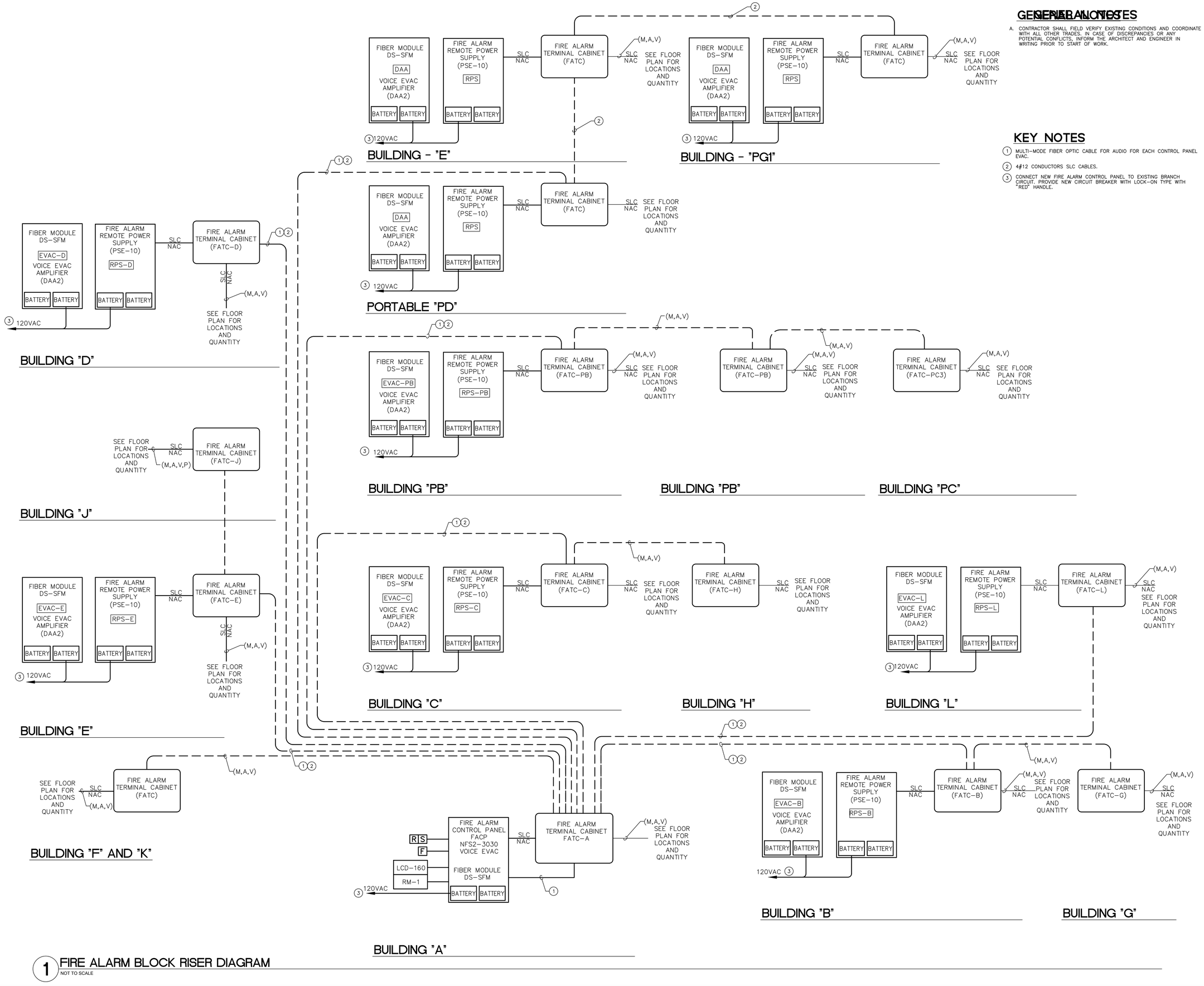
TITLE

FIRE ALARM
PORTABLE CLASSROOM
NEW PLANS

SHEET

FA2.5


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1 FIRE ALARM BLOCK RISER DIAGRAM
NOT TO SCALE

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

## KEY NOTES

1. MULTI-MODE FIBER OPTIC CABLE FOR AUDIO FOR EACH CONTROL PANEL EVAC.
2. 4#12 CONDUCTORS SLC CABLES.
3. CONNECT NEW FIRE ALARM CONTROL PANEL TO EXISTING BRANCH CIRCUIT. PROVIDE NEW CIRCUIT BREAKER WITH LOCK-ON TYPE WITH "RED" HANDLE.

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DATE: 12/11/2025

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Irvine, CA 92614
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www.lionakis.com
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760.560.0100
11-20-25 #2590-00194
www.salasobrien.com
E-Mail
AJ - - NP

SEAL

REGISTERED PROFESSIONAL ENGINEER
EDMOND A. SALAS
No. E 13809
Exp. 8/30/27
ELECTRICAL
STATE OF CALIFORNIA

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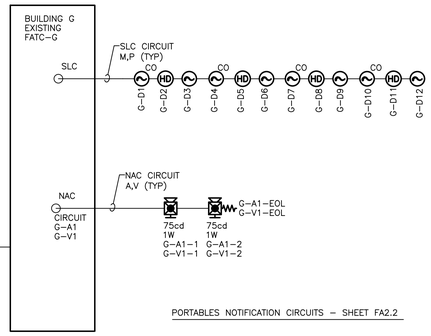
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TITLE
FIRE ALARM
BLOCK RISER DIAGRAM

SHEET
FA4.1

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PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.2

## WIRING SCHEDULE

| DES | CONDUCTOR TYPE | WIRE COLOR | CIRCUIT TYPE |
|---|---|---|---|
| M | (1) 1 PR#14 TWISTED SHIELDED | RED/BLACK/SHIELD | SIGNAL LINE CIRCUIT |
| A | (2) #12 THHN (UON ON CALCS) | BLUE/WHITE | NOTIFICATION APP. CIRCUIT (NAC) |
| V | (2) #12 THHN (UON ON CALCS) | GREEN/BLUE | NOTIFICATION APP. CIRCUIT (NAC) |
| P | (2) #12 THHN | RED/BLACK | POWER |
| | | | |

## GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. FIELD VERIFY ALL EXISTING CONDUITS CONDITION FOR NEW CABLING. REUSED EXISTING CONDUIT WHERE POSSIBLE AND CONTRACTOR SHALL PROVIDE NEW CONDUITS AS REQUIRED MINIMUM 3/4"C.

C. REFER TO FLOOR PLANS FOR EXACT QUANTITY, TYPE, AND LOCATION OF ALL DEVICES.

D. ALL DRAWINGS ARE DIAGRAMMATICALLY AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CAPTURE THE INTENT OF THE DRAWINGS.

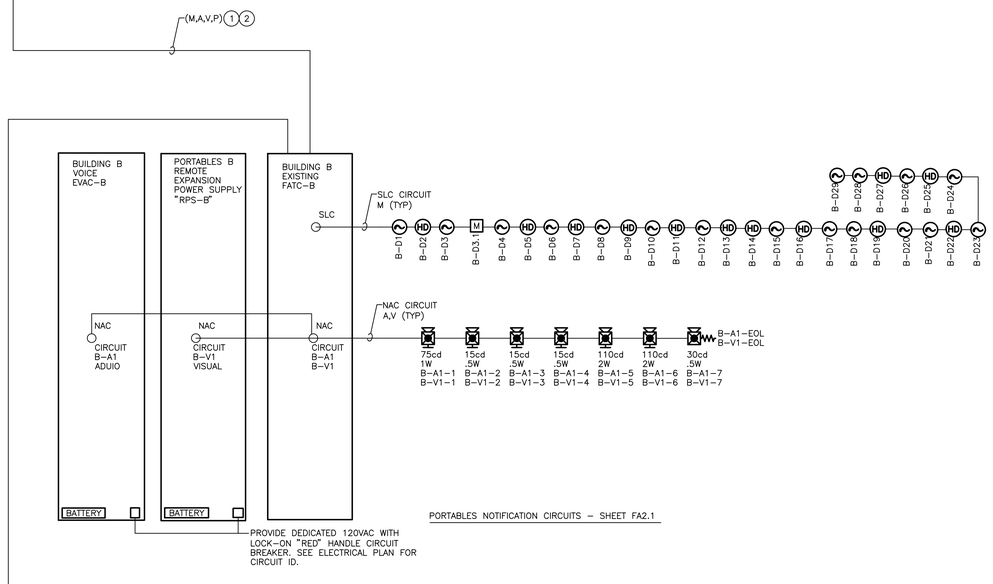
E. ALL WIRING INDICATED IS FOR GENERAL REFERENCE ONLY. CONTRACTOR SHALL PROVIDE ALL WIRING AND COMPONENTS NEEDED TO PROVIDE A COMPLETE OPERATIONAL SYSTEM.

F. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE REGULATIONS (CCR).

## KEY NOTES

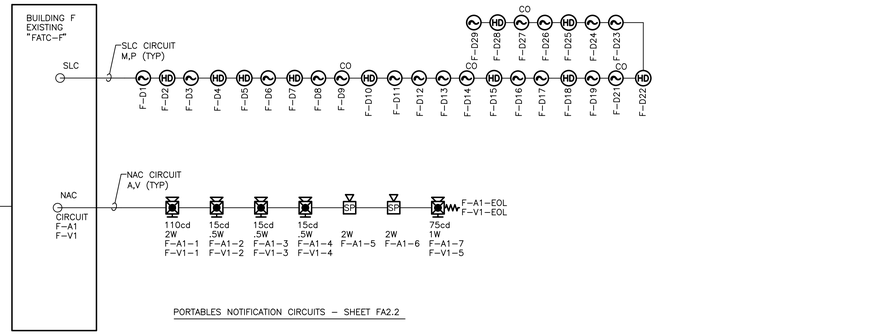
1. PROVIDE CABLING FOR UNDERGROUND OUTDOOR RATED TYPE.
2. PROVIDE NEW CABLING IN EXISTING CONDUIT.

## BUILDING G



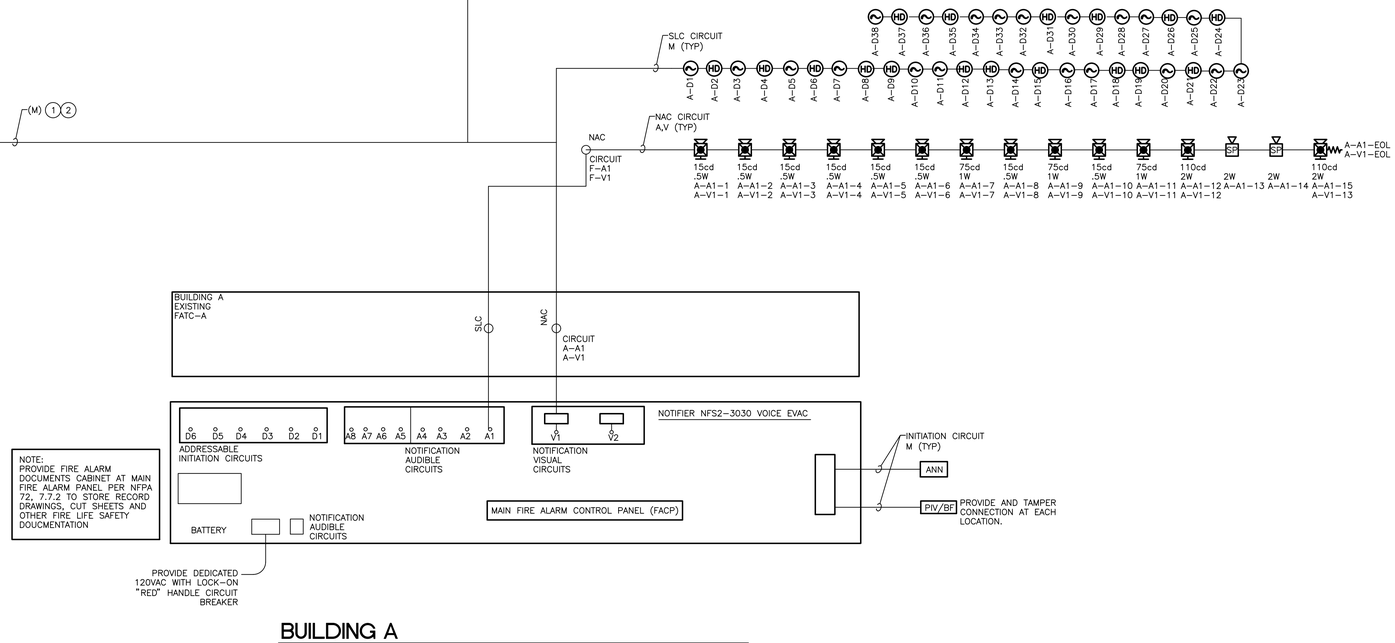

PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.1

## BUILDING B




PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.2

## BUILDING F AND K




## BUILDING A

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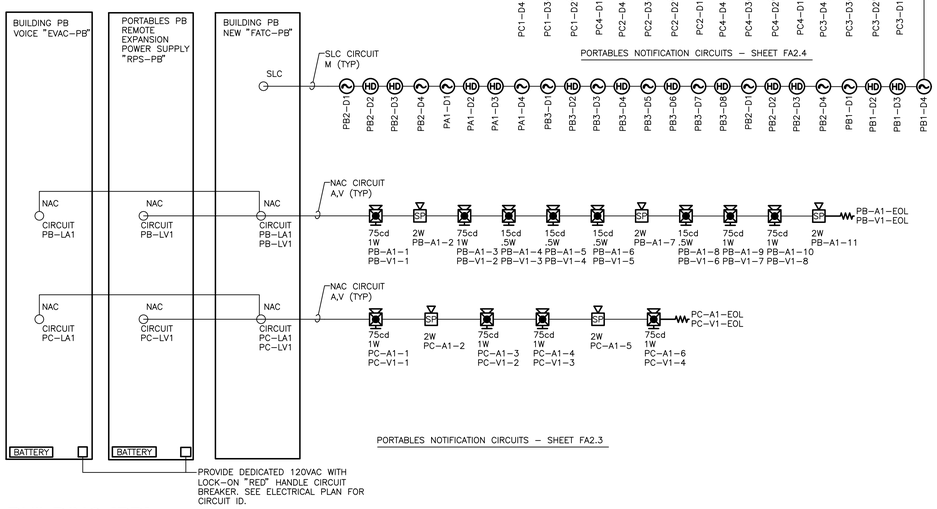
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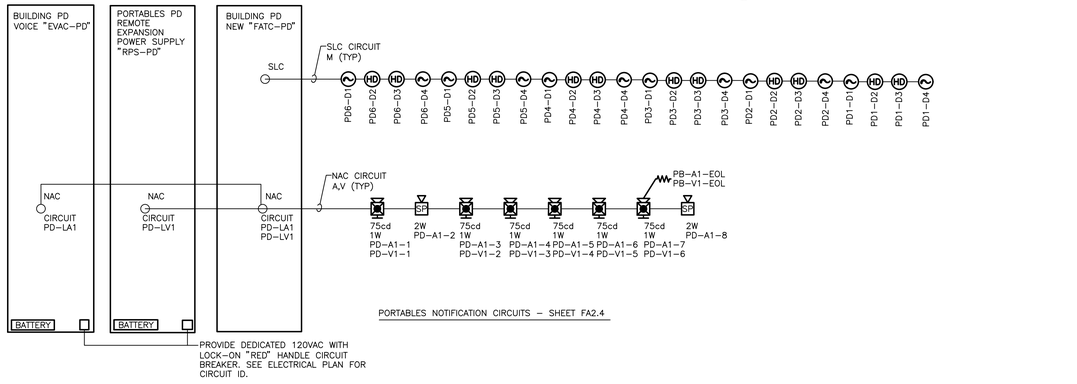
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TITLE
FIRE ALARM
RISER DIAGRAM

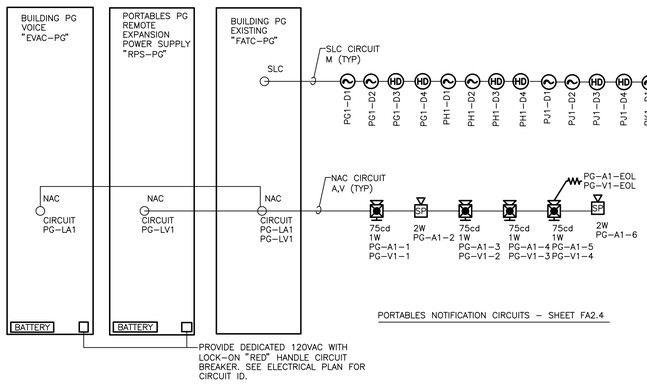
SHEET
FA4.2



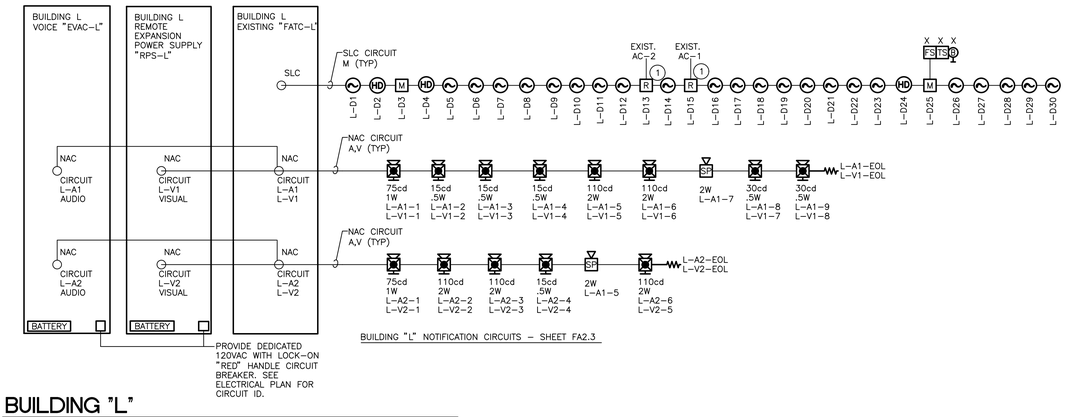

## BUILDING "PB"



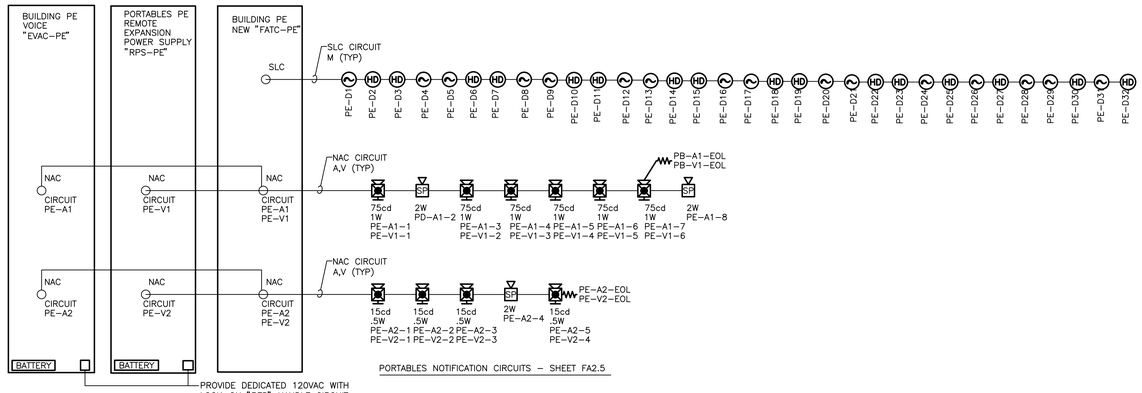

## BUILDING "PD"




## PORTABLES "PG"




## BUILDING "L"




## PORTABLES "PE"

| WIRING SCHEDULE | | | |
|---|---|---|---|
| DES | CONDUCTOR TYPE | WIRE COLOR | CIRCUIT TYPE |
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| P | (2) #12 THHN | RED/BLACK | POWER |
| | | | |

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F. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE REGULATIONS (CCR).

## KEY NOTES

(1) RELAY SHUT DOWN EXISTING ROOFTOP HVAC AND RESTART.

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TITLE
FIRE ALARM
RISER DIAGRAM

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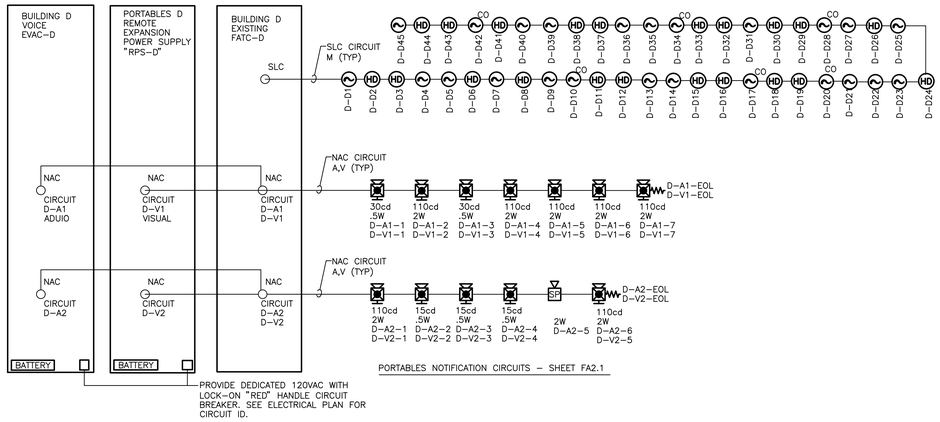
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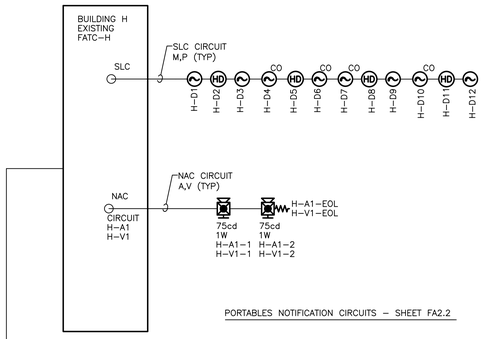
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PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.1

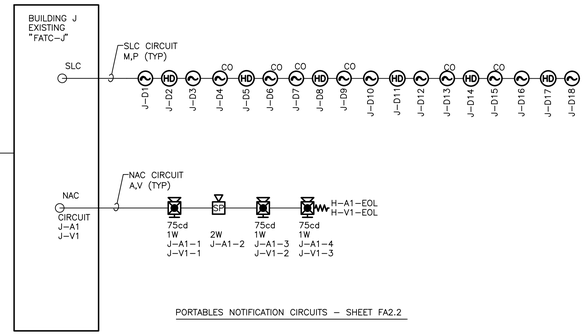
PROVIDE DEDICATED 120VAC WITH LOCK–ON "RED" HANDLE CIRCUIT BREAKER. SEE ELECTRICAL PLAN FOR CIRCUIT ID.

## BUILDING H



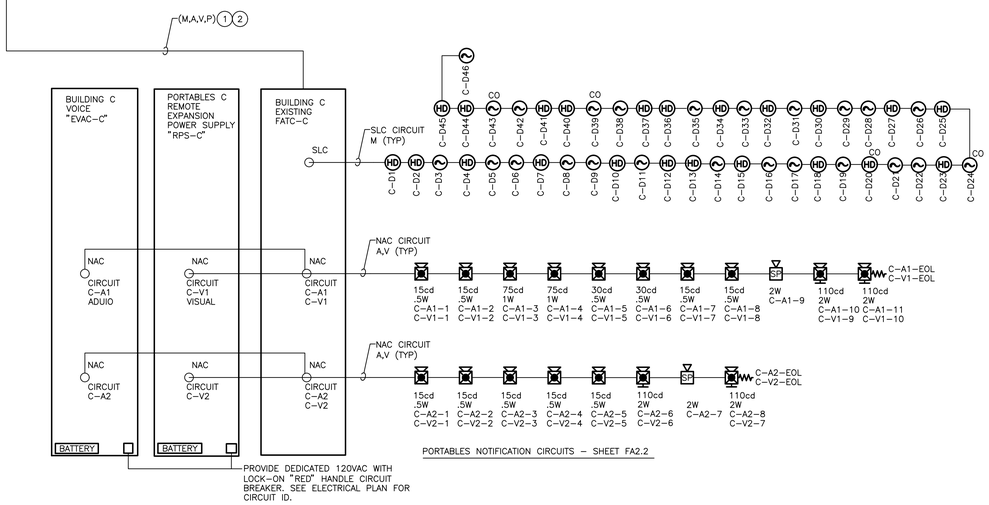

PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.2

## BUILDING J




PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.2

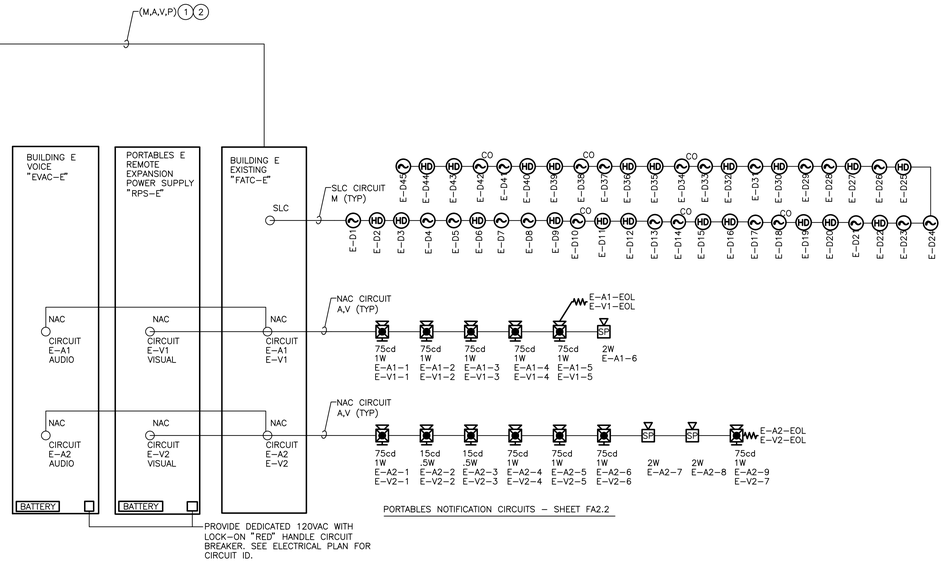
## BUILDING C




PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.2

PROVIDE DEDICATED 120VAC WITH LOCK–ON "RED" HANDLE CIRCUIT BREAKER. SEE ELECTRICAL PLAN FOR CIRCUIT ID.

## BUILDING E




PORTABLES NOTIFICATION CIRCUITS – SHEET FA2.2

PROVIDE DEDICATED 120VAC WITH LOCK–ON "RED" HANDLE CIRCUIT BREAKER. SEE ELECTRICAL PLAN FOR CIRCUIT ID.

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REGISTERED PROFESSIONAL ENGINEER EDMOND A. SALAS No. E18800 Exp. 8/30/27 ELECTRICAL STATE OF CALIFORNIA

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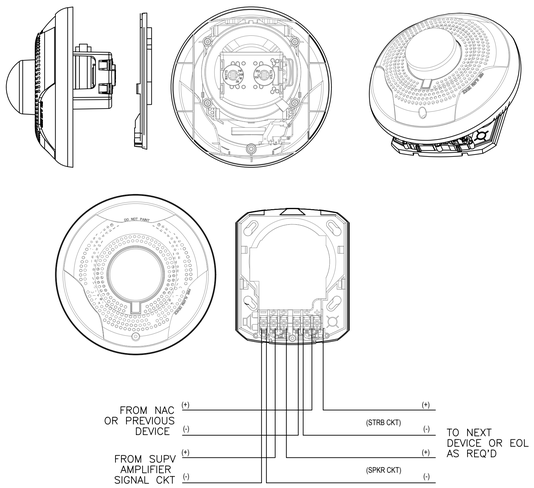
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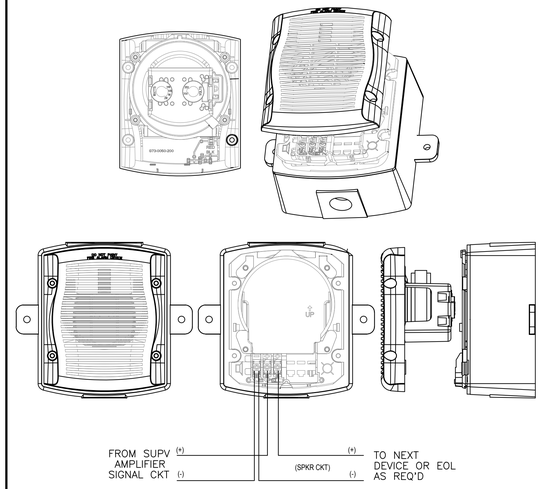
TITLE
FIRE ALARM RISER DIAGRAM

SHEET
FA4.4



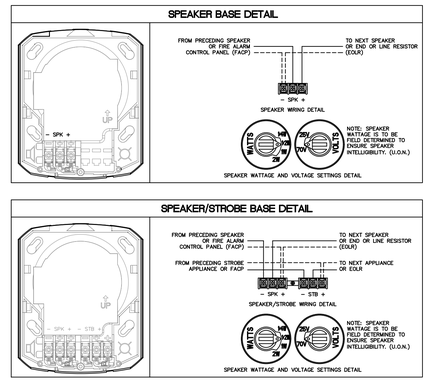

## INTERIOR CEILING SPEAKER STROBE DETAIL

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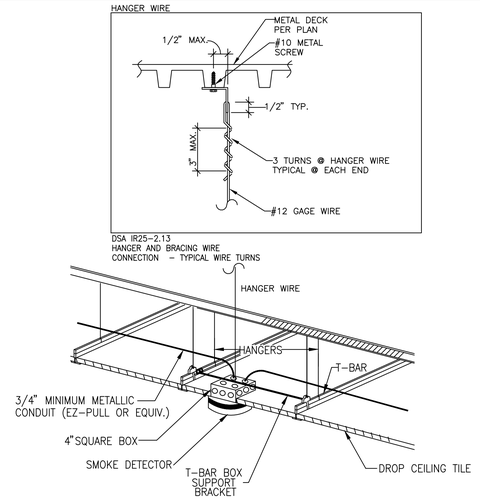

## EXTERIOR WALL SPEAKER

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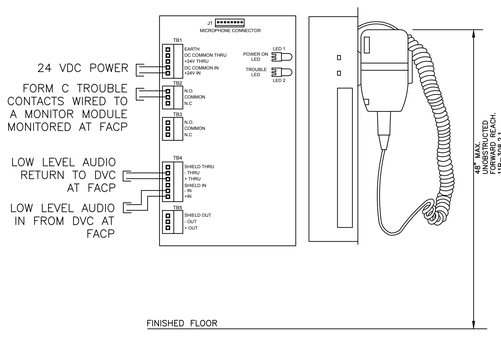

## NOTIFICATION DEVICES

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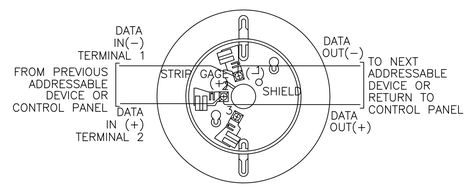

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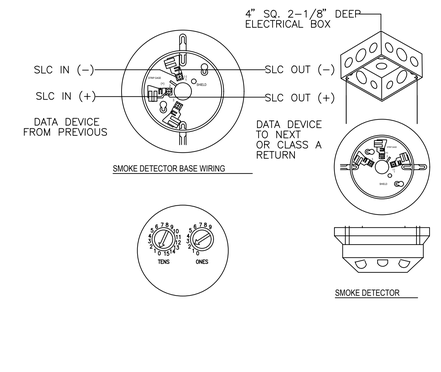

## REMOTE MICROPHONE RM-1

SCALE: NONE | 10



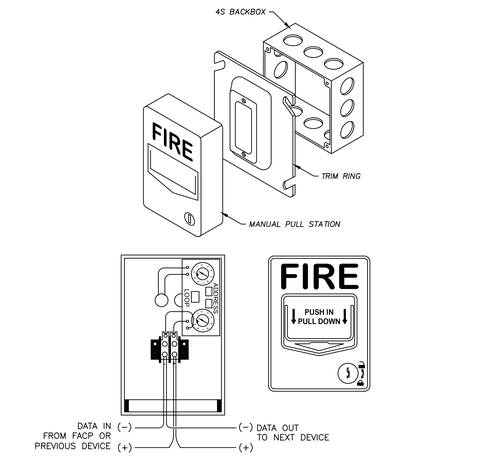

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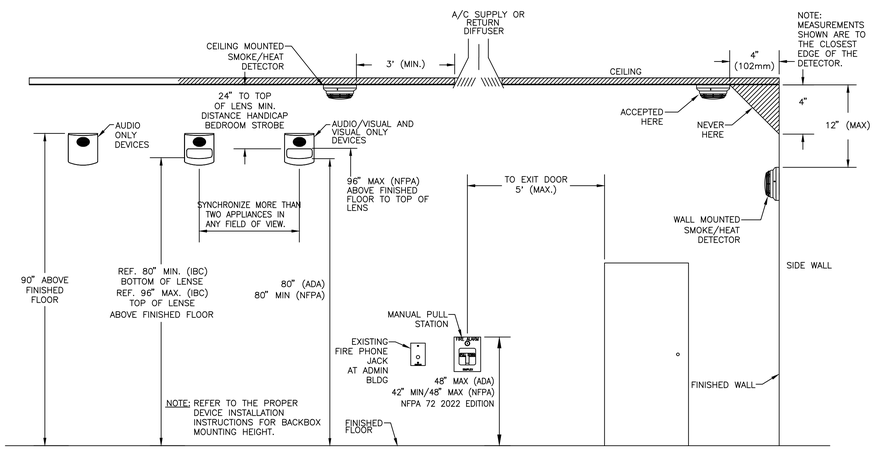

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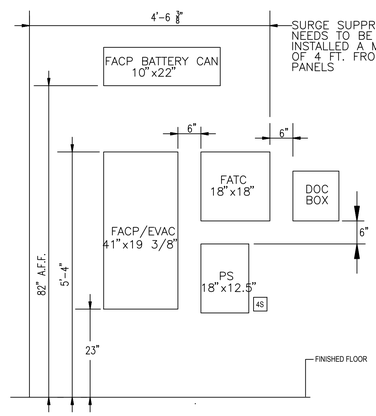

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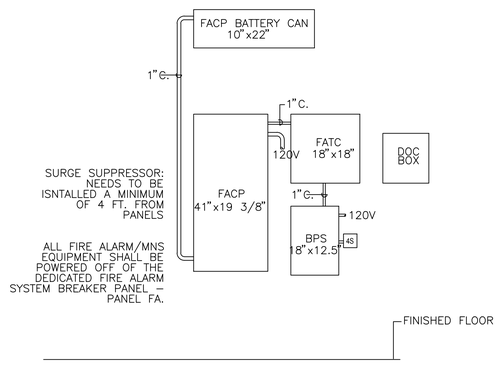

## DEVICE MOUNTING HEIGHT REFERENCE (PER NFPA 72)

SCALE: NONE | 8




## TYPICAL CONTROL PANEL CONDUIT LAYOUT DIAGRAM

SCALE: NONE | 3




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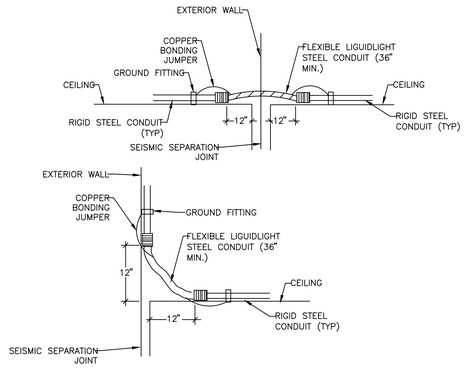
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TITLE
FIRE ALARM DETAILS

SHEET
FA5.1

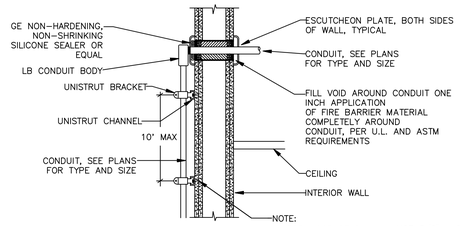
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## CONDUIT SEISMIC SEPARATION JOINT

SCALE: NONE | 9

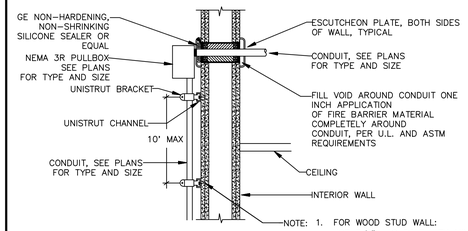



NOTE:

1. FOR WOOD STUD WALL: USE 3/8" LAG BOLT WITH MIN. 4D EMBEDMENT INTO STUDS. (ONE AT EACH END OF UNISTRUT CHANNEL)
2. FOR CONCRETE WALL: USE 3/8" WEDGE ANCHOR WITH MIN. 2 1/2" EMBEDMENT INTO CONCRETE WALL. (ONE AT EACH END OF UNISTRUT CHANNEL).

## CONDUIT EXT. WALL PENETRATION

SCALE: NONE | 7

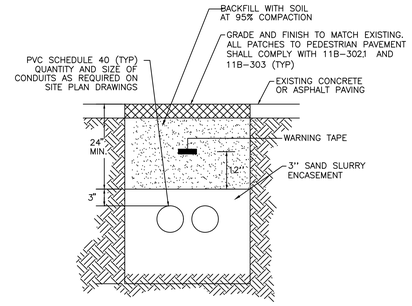



NOTE:

1. FOR WOOD STUD WALL: USE 3/8" LAG BOLT WITH MIN. 4D EMBEDMENT INTO STUDS. (ONE AT EACH END OF UNISTRUT CHANNEL)
2. FOR CONCRETE WALL: USE 3/8" WEDGE ANCHOR WITH MIN. 2 1/2" EMBEDMENT INTO CONCRETE WALL. (ONE AT EACH END OF UNISTRUT CHANNEL).

## PULLBOX EXT. WALL PENETRATION

SCALE: NONE | 4



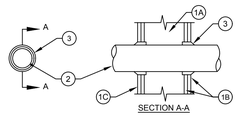

NOTE:

1. CONTRACTOR SHALL MAINTAIN A 12" SEPARATION BETWEEN FIRE AND SIGNAL CONDUITS.
2. REQUIRED CONDUIT CLEARANCES IN TRENCH SHALL BE MAINTAINED USING COMBINATIONS OF "CARLON" BASE AND INTERMEDIATE SPACERS OR EQUIVALENT.

## UNDERGROUND TRENCHING DETAIL

SCALE: NONE | 1

### THROUGH-PENETRATION FIRESTOP SYSTEMS (GYPSUM) WHERE APPLICABLE




SECTION A-A

SYSTEM NO. W-L-1001

F RATINGS – 1, 2, 3 AND 4 HR (SEE ITEMS 2 AND 3)
T RATINGS – 0, 1, 2, 3, AND 4 HR (SEE ITEM 3)
L RATING AT AMBIENT – LESS THAN 1 CFM/SQ. FT.
L RATING AT 400 F – LESS THAN CFM/SQ. FT.

1. WALL ASSEMBLY– THE 1, 2, 3 OR 4 HR FIRE–RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX 2H FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOMINAL 2 BY 6 IN. LUMBER SPACED 24 IN. OC WITH NOM 2 BY 4 IN LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MINIMUM 3–5/8 IN. WIDE BY 1–3/8 IN DEEP CHANNELS SPACED MAX. 24 IN. OC.
   B. WALLBOARD, GYPSUM• – NOM 1/2 OR 5/8 IN. THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM. OF OPENING IS 13–1/2 IN.
2. PIPE OR CONDUIT – NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 6 IN. DIAMETER (OR SMALLER) STEEL CONDUIT, NOM 4 IN. DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR TYPE L (OR HEAVIER) COPPER TUBING OR NOM 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT. WHEN COPPER PIPES OR FLEXIBLE STEEL CONDUIT IS USED, MAX F RATING OF FIRESTOP SYSTEM (ITEM 3) IS 2 H. STEEL PIPES OR CONDUITS LARGER THAN NOM 4 IN. DIAM MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS. A MAX OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.
3. FILL, VOID OR CAVITY MATERIAL• – CAULK – CAULK FILL MATERIAL TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN 1/4 IN. DIAM BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW: F MAX PIPE T

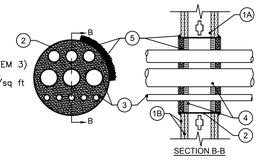
| MAX PIPE OR CONDUIT DIA IN. | ANNULAR SPACE IN. | F RATING HR | T RATING HR |
|---|---|---|---|
| 1 | 0 to 3/16 | 1 or 2 | 0+,1 or 2 |
| 1 | 1/4 to 1/2 | 3 or 4 | 3 or 4 |
| 4 | 0 to 1-1/2 | 1 or 2 | 0 |
| 6 | 1/4 to 1/2 | 3 or 4 | 0 |
| 12 | 3/16 to 3/8 | 1 or 2 | 0 |

+WHEN COPPER PIPE IS USED, T RATING IS 0 H.
3M COMPANY – CP 25WB+ CAULK OR FB–3000 WT SEALANT.
•BEARING THE UL CLASSIFICATION MARKING

### THROUGH-PENETRATION FIRESTOP SYSTEMS (GYPSUM) WHERE APPLICABLE

SYSTEM NO. W-L-1016
(FORMERLY SYSTEM NO. 322)

F RATING–– 2 HR
T RATINGS––1, 1–1/2 AND 2 HR (SEE ITEM 3)
L RATING AT AMBIENT––2 CFM/sq ft
L RATING AT 400° F––LESS THAN 1 CFM/sq ft



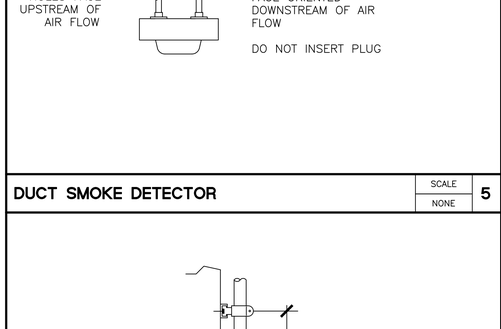

SECTION B-B

1. WALL ASSEMBLY – THE FIRE–RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 6 IN. LUMBER SPACED 24 IN. OC WITH NOM 2 BY 6 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3–5/8 IN. WIDE BY 1–3/8 IN DEEP CHANNELS SPACED MAX 24 IN. OC.
   B. GYPSUM BOARD• – TWO LAYERS OF NOM 5/8 IN. THICK GYPSUM WALLBOARD AS SPECIFIED IN THE INDIVIDUAL WALL OR PARTITION DESIGN. MAX DIAM OF THROUGH OPENINGS CUT IN WALLBOARD LAYERS IS 12 IN. MAX DIMENSIONS FOR RECTANGULAR OPENING IS 12 IN. BY 9 IN.
   C. FASTENERS – WHEN WOOD STUD FRAMING IS EMPLOYED, GYPSUM WALLBOARD ATTACHED TO STUDS WITH CEMENT COATED NAILS AS SPECIFIED IN THE INDIVIDUAL U300–SERIES DESIGN. WHEN STEEL CHANNEL STUD FRAMING IS EMPLOYED, GYPSUM WALLBOARD ATTACHED TO STUDS WITH TYPE S SELF–DRILLING, SELF–TAPPING BUGLE–HEAD STEEL SCREWS AS SPECIFIED IN THE INDIVIDUAL U400–SERIES DESIGN.
2. STEEL SLEEVE – NO. 28 GAUGE GALV SHEET STEEL FORMED INTO MAX 12 IN. DIAM OR MAX 12 IN. BY 9 IN. SLEEVE WITH NOM 2 IN. OVERLAP AT SEAM. LENGTH OF SLEEVE TO BE APPROX 1 IN. GREATER THAN OVERALL THICKNESS OF WALL ASSEMBLY, SUCH THAT, WHEN INSTALLED, THE ENDS OF THE SLEEVE WILL PROJECT APPROX 1/2 IN. BEYOND THE SURFACE OF THE WALL ON BOTH SIDES OF THE WALL ASSEMBLY. MAX DIAM OF CIRCULAR THROUGH OPENINGS IN GYPSUM WALLBOARD LAYERS ON EACH SIDE OF WALL ASSEMBLY TO BE 12 IN. MAX DIMENSIONS FOR RECTANGULAR OPENING IS 12 IN. BY 9 IN. SLEEVE INSTALLED BY COILING THE SHEET STEEL TO A DIAM SMALLER THAN THE THROUGH OPENING, INSERTING THE COIL THROUGH THE OPENINGS AND RELEASING THE COIL TO LET IT UNCOIL AGAINST THE CIRCULAR CUTOUTS IN THE GYPSUM WALLBOARD LAYERS.
3. STEEL PIPE OR CONDUIT – NOM 3 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, STEEL CONDUIT OR STEEL ELECTRICAL METALLIC TUBING. MULTIPLE PIPES AND/OR CONDUIT PERMITTED IN SLEEVED OPENING PROVIDED A MIN SEPARATION OF 1/4 IN. IS MAINTAINED BETWEEN PIPES OR CONDUITS. PIPES AND/OR CONDUITS TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. THE T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE MAX DIAM OF THE PIPES OR CONDUITS, AS TABULATED BELOW:
4. PACKING MATERIAL – MIN 1 IN. THICKNESS OF RIGID GLASS FIBER INSULATION OR MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO STEEL SLEEVE ON BOTH SIDES OF WALL ASSEMBLY AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED MIN 5/8 IN. FROM SURFACE OF WALL ON BOTH SIDES OF WALL ASSEMBLY.
5. FILL,VOID OR CAVITY MATERIALS• – CAULK – APPLIED TO FILL THE STEEL SLEEVE TO A MIN DEPTH OF 1 IN. ON BOTH SIDES OF WALL ASSEMBLY. A NOM 1/4 IN. DIAM CONTINUOUS BEAD OF CAULK SHALL BE APPLIED AROUND THE CIRCUMFERENCE OF THE STEEL SLEEVE AT ITS EGRESS FROM THE GYPSUM WALLBOARD LAYERS ON BOTH SIDES OF THE WALL ASSEMBLY. 3M COMPANY – CP 25WB+ CAULK OR FB–3000 WT SEALANT.
•BEARING THE UL CLASSIFICATION MARKING

| MAX PIPE OR CONDUIT DIAM IN. | T RATING HR |
|---|---|
| 3 | 1 |
| 1 | 1-1/2 |
| 3/4 | 2 |

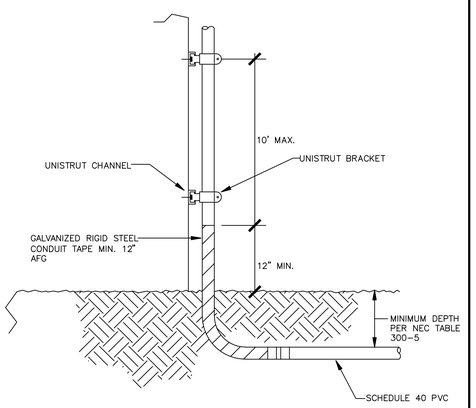
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## DUCT SMOKE DETECTOR

SCALE: NONE | 5

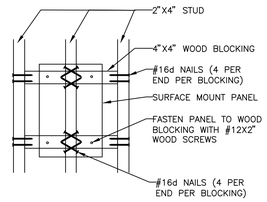



**Note:**

1. FOR WOOD STUD WALL: USE 3/8" LAG BOLT WITH MIN. 4D EMBEDMENT INTO STUDS. (ONE AT EACH END OF UNISTRUT CHANNEL)

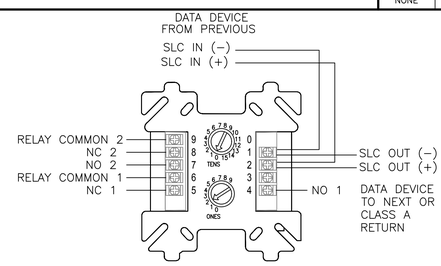
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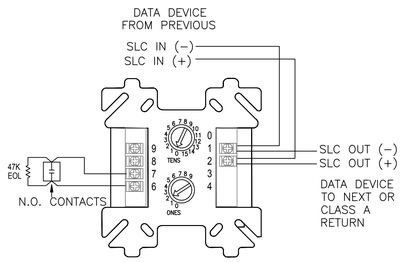



## SURFACE MOUNT PANEL FACP AND RPS

SCALE: NONE | 2




INTELLIGENT RELAY MODULE WIRING




INTELLIGENT MONITOR MODULE WIRING

## MONITORING MODULE

SCALE: NONE | 3

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DATE: 12/11/2025

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| AJ | - | - | NP |
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MVUSD ALTA MURRIETA FA MOD

39475 Whitewood Rd.
Murrieta, CA 92563

CLIENT
MURRIETA VALLEY USD

41870 MCALBY ST. MURRIETA, CA 92562

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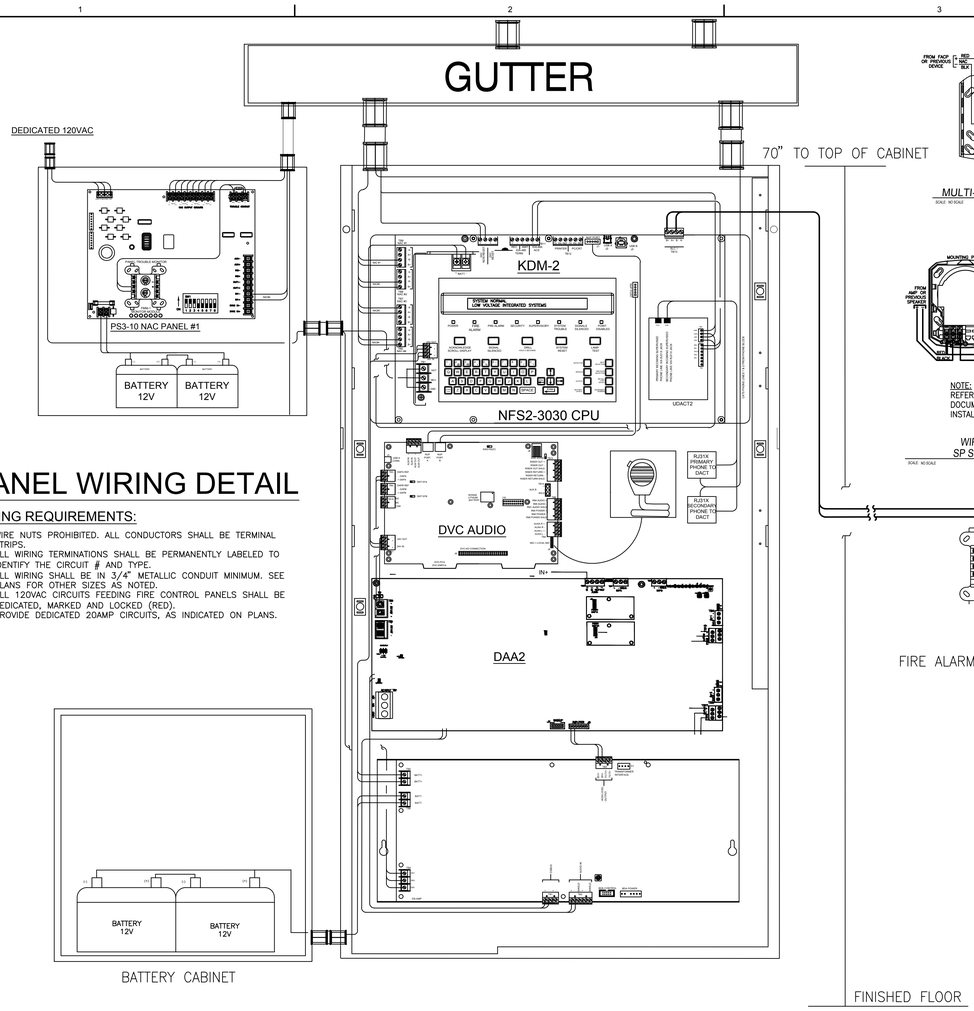
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# PANEL WIRING DETAIL

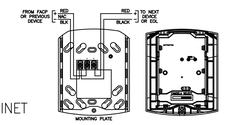
## WIRING REQUIREMENTS:

1. WIRE NUTS PROHIBITED. ALL CONDUCTORS SHALL BE TERMINAL STRIPS.
2. ALL WIRING TERMINATIONS SHALL BE PERMANENTLY LABELED TO IDENTIFY THE CIRCUIT # AND TYPE.
3. ALL WIRING SHALL BE IN 3/4" METALLIC CONDUIT MINIMUM. SEE PLANS FOR OTHER SIZES AS NOTED.
4. ALL 120VAC CIRCUITS FEEDING FIRE CONTROL PANELS SHALL BE DEDICATED, MARKED AND LOCKED (RED).
5. PROVIDE DEDICATED 20AMP CIRCUITS, AS INDICATED ON PLANS.




## 1 FACP NOTIFIER CONTROL PANEL WIRING DETAIL

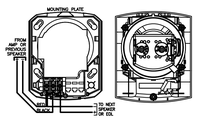
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NOTE: REFER TO MANUFACTURERS DOCUMENTATION FOR COMPLETE INSTALLATION INSTRUCTIONS.

*WIRING DIAGRAM MULTI-CANDELA ALARM STROBES*

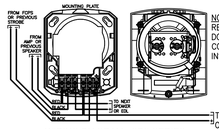
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NOTE:
REFER TO MANUFACTURERS DOCUMENTATION FOR COMPLETE INSTALLATION INSTRUCTIONS.

*WIRING DIAGRAM SP SERIES SPEAKER*

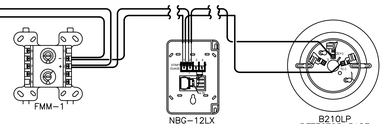
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NOTE:
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*WIRING DIAGRAM - SPS SERIES MULTI-CANDELA SPEAKER/ALERT STROBES*

SCALE: NO SCALE




FIRE ALARM FIELD DEVICE WIRING DETAILS

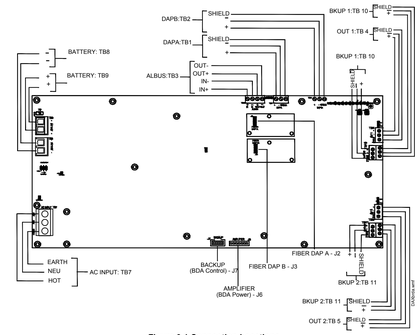
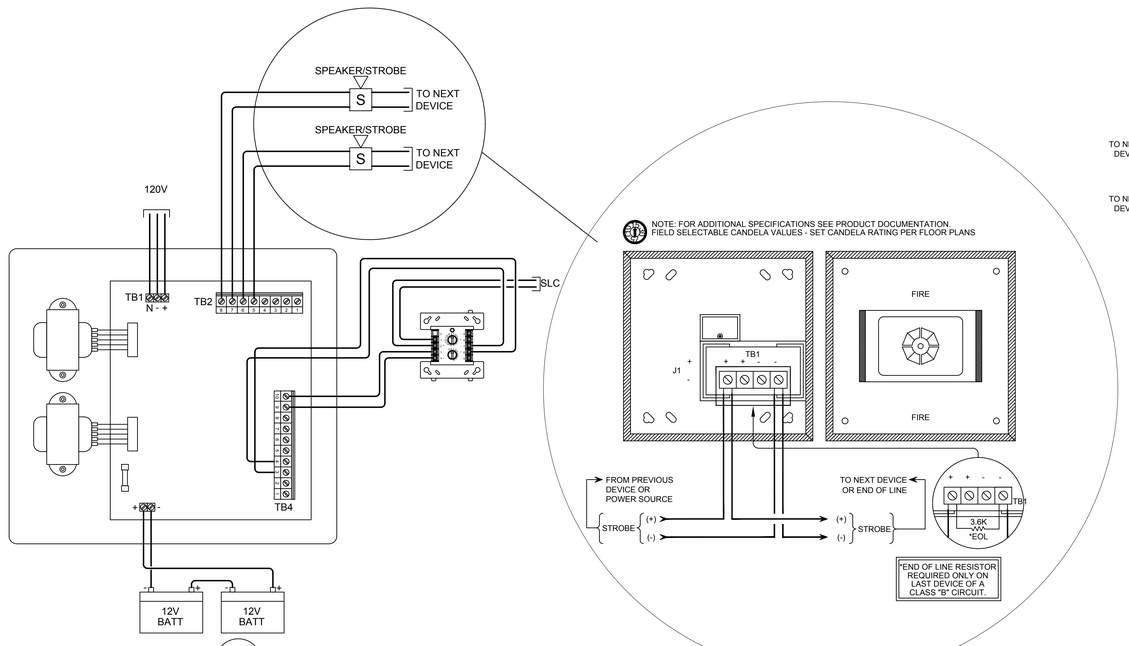



Figure 3.1 Connection Locations

## 4 DAA CONNECTION DETAIL

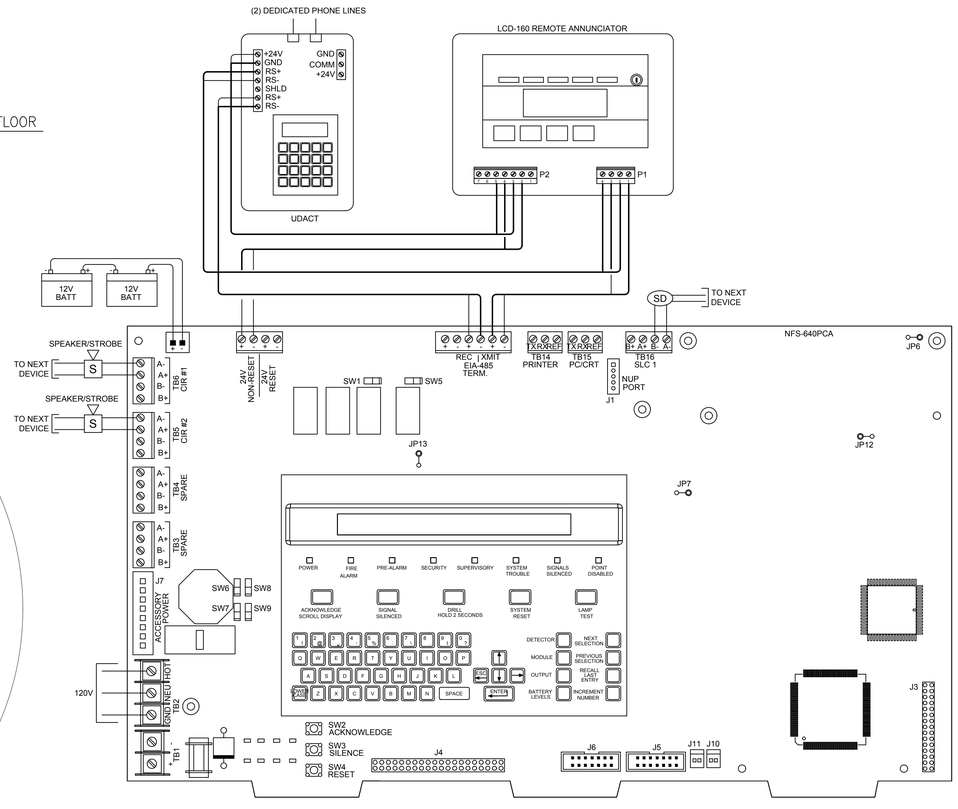
**SCALE: NONE**




## 3 POWER EXTENDER NOTIFIER DETAIL

**SCALE: NONE**




## 2 FACP NOTIFIER NFS2-3030 BOARD WIRING DETAIL

**SCALE: NONE**

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41870 MCALBY ST. MURRIETA, CA 92562

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