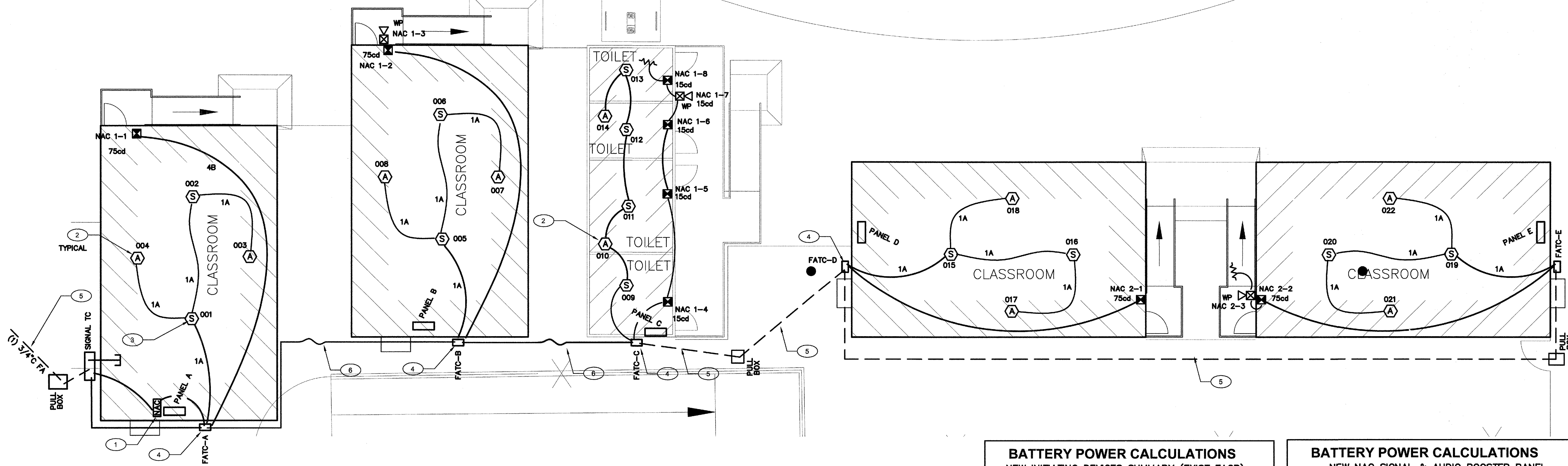


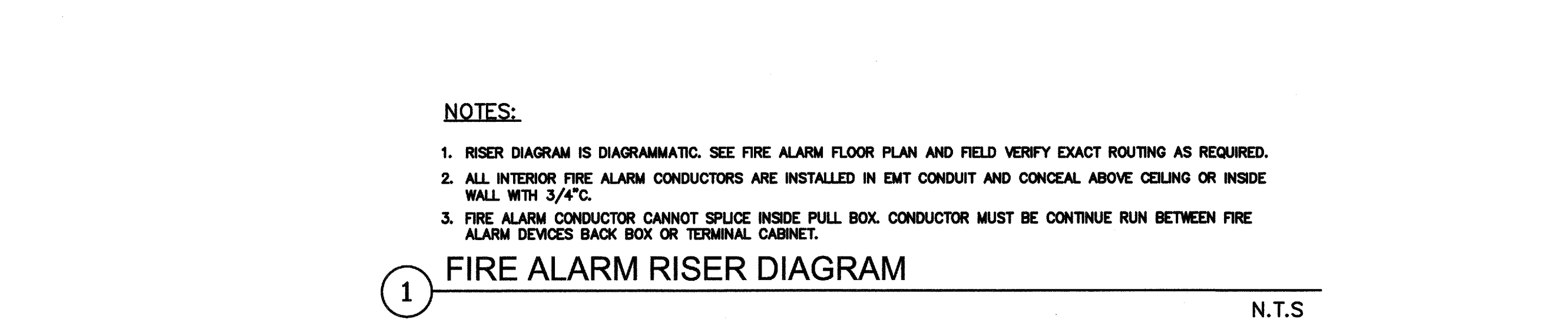
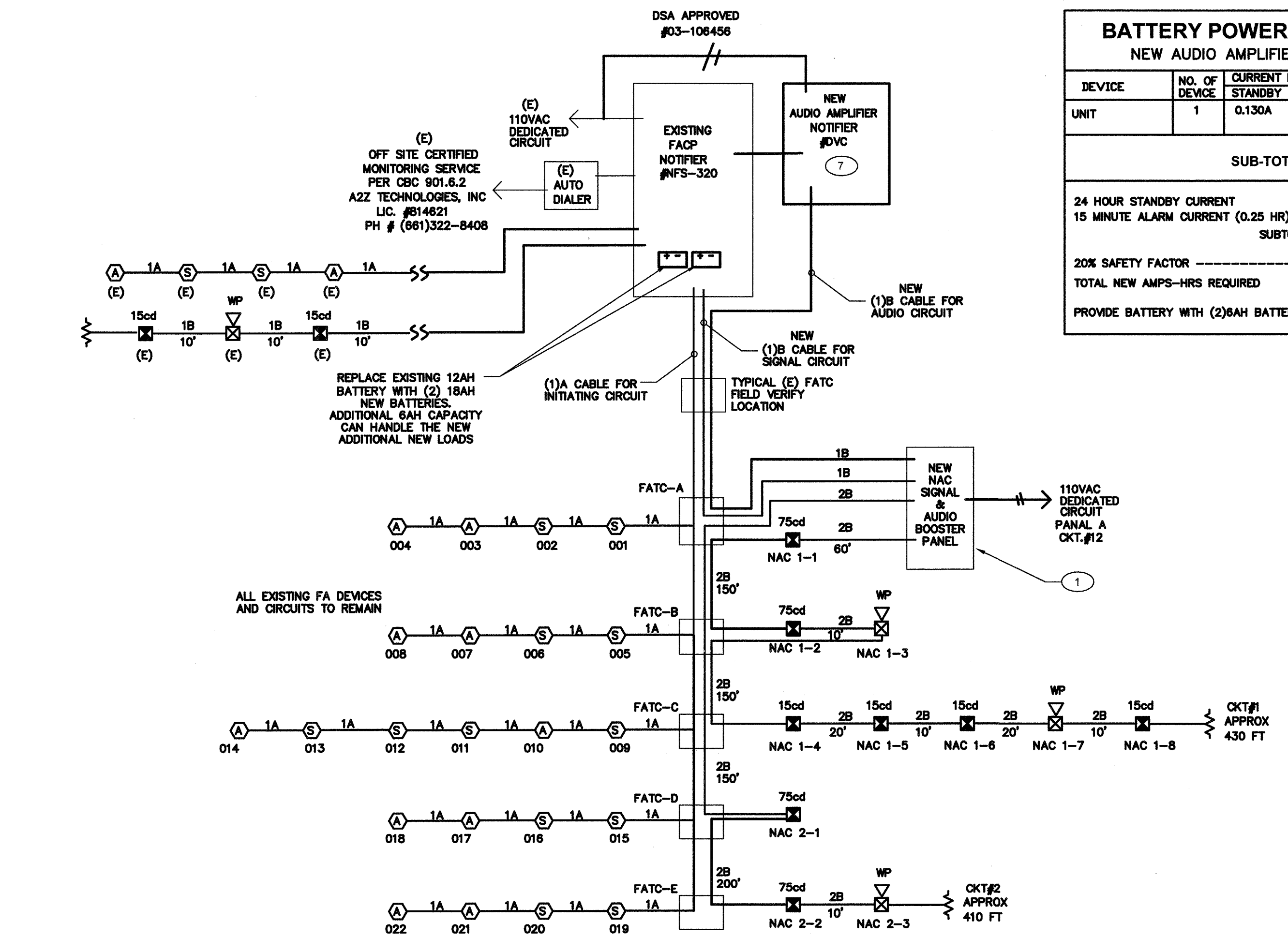
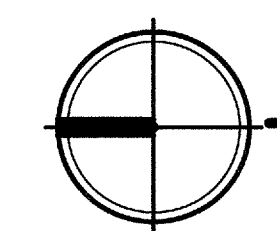
1" = 30'-0"  
 1" = 40'-0"  
 1" = 20'-0"  
 1" = 1'-0"  
 1/8" = 1'-0"  
 1/4" = 1'-0"



# FIRE ALARM PLAN

## 4 RELOCATABLE CLASSROOMS AND 1 TOILET BLDG

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



### BATTERY POWER CALCULATIONS

#### NEW INITIATING DEVICES SUMMARY (EXIST FACP)

DEVICE	NO. OF DEVICE	CURRENT PER DEVICE	STANDBY CURRENT	LED CURRENT
SMOKE DETECTOR	13	0.0003A	0.0039A	0.085A
HEAT DETECTOR	10	0.0003A	0.0030A	0.065A
SUB-TOTAL			0.0069A	0.150A
24 HOUR STANDBY CURRENT			0.168AH	
15 MINUTE ALARM CURRENT (0.25 HR)			0.124AH	
SUBTOTAL			0.178AH	
20% SAFETY FACTOR			0.036AH	0.214AH
TOTAL NEW AMPS-HRS REQUIRED			0.036AH	0.214AH

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

### FA CABLE SCHEDULE

TYPE	DESCRIPTION
A	INITIATING CIRCUIT CABLE 2#16 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE, FOR INDOOR VIA J-HOOK AND OUTDOOR VIA MIN. 3/4" CONDUIT INSTALLATION. WEST PENN #D990 OR EQUAL.
B	NAC SIGNAL CIRCUIT CABLE 2#12 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE, FOR INDOOR VIA J-HOOK AND OUTDOOR VIA MIN. 3/4" CONDUIT INSTALLATION. WEST PENN #AQ227 OR EQUAL.

### SIGNAL CIRCUIT LOAD SUMMARY

OUTDOOR SPEAKER	MINI HORN	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	MINI HORN	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE	SMOKE/STROBE		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.786A	0.786A	430'	21.6	12	6530	1.118V	14.7%	0.364A	0.364A	410'	21.6	12	6530	0.494V	8.1%						

### FIRE ALARM SYMBOLS AND SCHEDULE

ITEM	DESCRIPTION	MODEL NUMBER	CSFM NUMBER	MOUNT	BACK BOX
[FACP]	(E) FACP FOR REFERENCE ONLY	NOTIFIER #NFS-320	7185-0028:243	+60"	EQUIPMENT CABINET
[NAC]	NAC SIGNAL AND AUDIO BOOSTER PANEL	WHELOCK #SPB-80/4	6911-0785:157	+60"	EQUIPMENT CABINET
[DVC]	DIGITAL VOICE COMMAND CENTER INTERCONNECT WITH (E) FACP IN ADMIN OFFICE	NOTIFIER #DVC SSB-C4 ADDR-C4 (NFS2-640)	7185-0028:243	+60"	EQUIPMENT CABINET
[S]	SPEAKER STROBE WITH EVACUATION SPEAKER	NOTIFIER #SPSV WR	7320-1853:201	+80"	4"SQ X 2 1/2"D
[WP]	OUTDOOR EVACUATION SPEAKER WITH WEATHERPROOF BOX	NOTIFIER #SPRK WMBB	7320-1853:201	+90"	4"SQ X 2 1/2"D
[S]	ADDRESSABLE CEILING SMOKE DETECTOR WITH BASE	NOTIFIER #ST-851/B710P	7272-0028:206	CEILING	4"SQ X 2 1/2"D
[A]	ATTIC HEAT DETECTOR 190F TEMP WITH BASE	NOTIFIER #ST-851H/B710P	7270-0028:196	ATTIC	4"SQ X 2 1/2"D
[L]	FIRE ALARM CABLE POWER LIMITED	WEST PENN AQ SERIES	7161-0859:0101		
[Z]	END OF LINE RESISTOR	N/A	N/A	LAST DEVICE	4"SQ X 2 1/2"D

### F.A. MONITORING NOTES

- THE AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISORY STATION AS REQUIRED BY NFPA 72 AND AMENDED EITHER ULUX OR ULUS BY UNDERWRITERS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BE ARRANGED BY OWNER.

### COMPLETE AUTOMATIC FIRE ALARM PLAN SUBMITTAL

- THE FIRE ALARM SYSTEM SHOWN ON THESE PLANS HAS BEEN SUBMITTED AND APPROVED BY DIVISION OF THE STATE ARCHITECT. ANY SUBSTITUTION OF THE FIRE ALARM SYSTEM SHALL BE RESUBMITTED TO THE ARCHITECT FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL PAY ANY ADDITIONAL FEES THAT ARE INCURRED DUE TO THIS SUBSTITUTION.
- THE AUTOMATIC FIRE ALARM SYSTEM SHALL COVER ALL ROOMS AND AREAS AND UPON ACTIVATION OF AN INITIATING DEVICE ALERT ALL OCCUPANTS AND TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO AN APPROVED SUPERVISORY STATION. (EXCEPTION: SMOKE DETECTORS ARE NOT REQUIRED IN NON-ACCESSIBLE AREAS AS DEFINED IN EMERGENCY EXPRESS TERMS OF PROPOSED S.F.M. AMENDMENTS TO 2013 C.F.C. SECTION 210 (C.F.C. SECTIONS 1006.2.4.2.2.1.1 AND 1006.2.4.2.2.1.5)

# SHEET NOTES

- PROVIDE NEW FIRE ALARM SIGNAL AND AUDIO BOOSTER PANEL AND CONNECT TO (E) FACP PER RISER DIAGRAM. PROVIDE 110V POWER CONNECTION AND DEDICATED CIRCUIT FROM PANEL A-12. PROVIDE FIRE ZONE MAP, MEASURE ACTUAL LOAD CURRENT AND VOLTAGE DROP FOR EACH NAC SIGNAL CIRCUIT, AND STANDBY CURRENT AND ALARM CURRENT, SEND TO OWNER AND ENGINEER FOR REVIEW, AND PLASTIC LAMINATED ONE COPY INSIDE CABINET DOOR. SEE FIRE RISER DIAGRAM FOR DETAIL.
- LOCATE HEAT DETECTOR IN ATTIC AND SURFACE MOUNT ON THE BOTTOM OF RAFTER. DETECTOR COVERAGE WILL BE DERATED 50% ACROSS THE RAFTER. FIELD VERIFY LOCATION WITH GENERAL CONTRACTOR AND PROVIDE ATTIC HEAT DETECTOR IN EACH BAY OF STRUCTURAL.
- CEILING SMOKE DETECTOR 5 FEET FROM EXISTING NAC SIGNAL EXPANDER PANEL.
- NEW FATC ON BUILDING EXTERIOR WALL WITH 3/4" STUB INTO BUILDING ATTIC CAVITY. EXTEND NEW FA CONDUIT AND WIRING TO NEW BUILDINGS PER PLANS.
- NEW UG 3/4" FA CONDUIT, JOINT TRENCH WITH OTHER SIGNAL CONDUITS. SEE RISER DIAGRAMS.
- PROVIDED 3/4" WEATHERPROOF FLEX CONDUIT BETWEEN BUILDING.
- PROVIDE NEW FIRE ALARM DIGITAL VOICE COMMAND CENTER AND INTERCONNECT TO EXISTING FIRE ALARM CONTROL PANEL AND SURFACE MOUNT NEXT TO (E) FACE. FIELD VERIFY EXACT LOCATION. PROVIDE 110V POWER CONNECTION TO EXISTING FACP DEDICATED CIRCUIT. FIELD VERIFY LOCATION.

# F.A SYSTEM SCOPE OF WORK

- PROVIDE AUTOMATIC FIRE ALARM SYSTEM WITH VOICE EVACUATION SPEAKERS FOR THE NEW CLASSROOM BUILDINGS PER PLANS.
- EXISTING FACP IS 24VDC ADDRESSABLE, AND CLASS B WIRING SYSTEM, AND WITH OFF SITE MONITORING SERVICE VIA AUTO DUAL LINE DIALER AND TELEPHONE LINES.
- DURING THE FINAL TESTING, MEASURE ALL FIRE ALARM CURRENTS, VOLTAGE DROP FOR EACH SIGNAL CIRCUIT, SEND OWNER AND ENGINEER ONE COPY RECORD FOR REVIEW, AND PLASTIC LAMINATED ONE COPY INSIDE FACP CABINET DOOR.
- COMPLETE FIRE ALARM DRAWING SUBMITTAL IS PROVIDED.

# FIRE ALARM NOTES

- APPLICABLE STANDARD 2013 NFPA 72
- 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.
- COMPLETION OF THE INSTALLATION OF THE SYSTEMS, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF A DSA PROJECT INSPECTOR.
- A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION.
- ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE ARCHITECT/ENGINEER OF THE PROJECT.
- DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND/OR TESTING.
- 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 TESTED CRITERIA. APPROVED TYPE OF MATERIAL SHALL BE IDENTIFIED WITHIN THE SPECIFICATION WITHIN THE FIRE ALARM SECTION.
- WALL MOUNTED VISUAL NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80" MINIMUM AND 85" MAXIMUM FROM FINISHED FLOOR.
- WALL MOUNTED AUDIBLE NOTIFICATION DEVICES SHALL HAVE THEIR TOPS MOUNTED AT 90" MINIMUM AND 100" MAXIMUM FROM FINISHED FLOOR AND NO CLOSER THEN 6" TO A HORIZONTAL STRUCTURE.
- AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 DECIBELS (Dba) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 Dba ABOVE THE MAXIMUM SOUND LEVEL, HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIABLE SPACE WITHIN THE BUILDING.
- AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.
- THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
- VISUAL DEVICES SHOULD NOT EXCEED 2 FLASHES PER SECOND AND SHOULD NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THE DEVICES SHALL HAVE A FLASHING LIGHT SOURCE NOT LESS THAN 15 CANDELLA. VISUAL DEVICES WITHIN 55' FROM EACH OTHER SHALL BE SYNCHRONIZED.
- UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATERTIGHT FITTING AND WIRE TO BE APPROVAL FOR WET LOCATIONS.
- ALL FIRE ALARM WIRING SHALL BE FLP OR FPLP (FIRE POWER LIMITED OR FIRE POWER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE THIN OR THIN.
- PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC. SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1" FROM FIRE SPRINKLERS OR S FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEWLY INSTALLED FIRE ALARM DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
- ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE CEILINGS, UNDER FLOORS AND IN WALLS IN A NEAT AND PROTECTED MANNER AS INDICATED ON DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
- FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED THE WEIGHT OF 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
- A DEDICATED BRANCH CIRCUIT SHALL BE PROVIDED FOR FIRE ALARM EQUIPMENT. THIS CIRCUIT SHALL BE ENERGIZED FROM 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.
- THE INSTALLING CONTRACTOR SHALL PROVIDE A RECORD OF COMPLETION PER NFPA 72, FIGURE 10.18.2.1.1.
- CONTROL PANELS, REMOTE ANNUNCIATORS SHALL BE INSTALLED WITH THEIR BOTTOMS MOUNTED AT 48"
- THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.8.2.
- SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
- OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.

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Project Name & Address  
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**4 RELOCATABLE CLASSROOMS AND 1 TOILET BLDG**  
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 Designer: J CHONG  
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