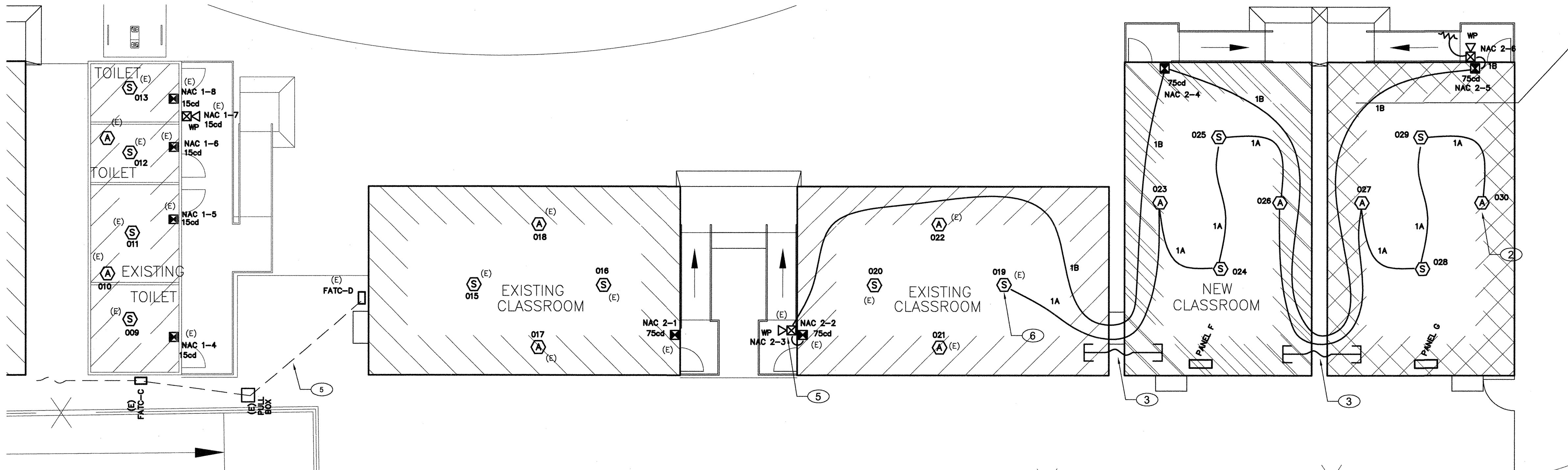
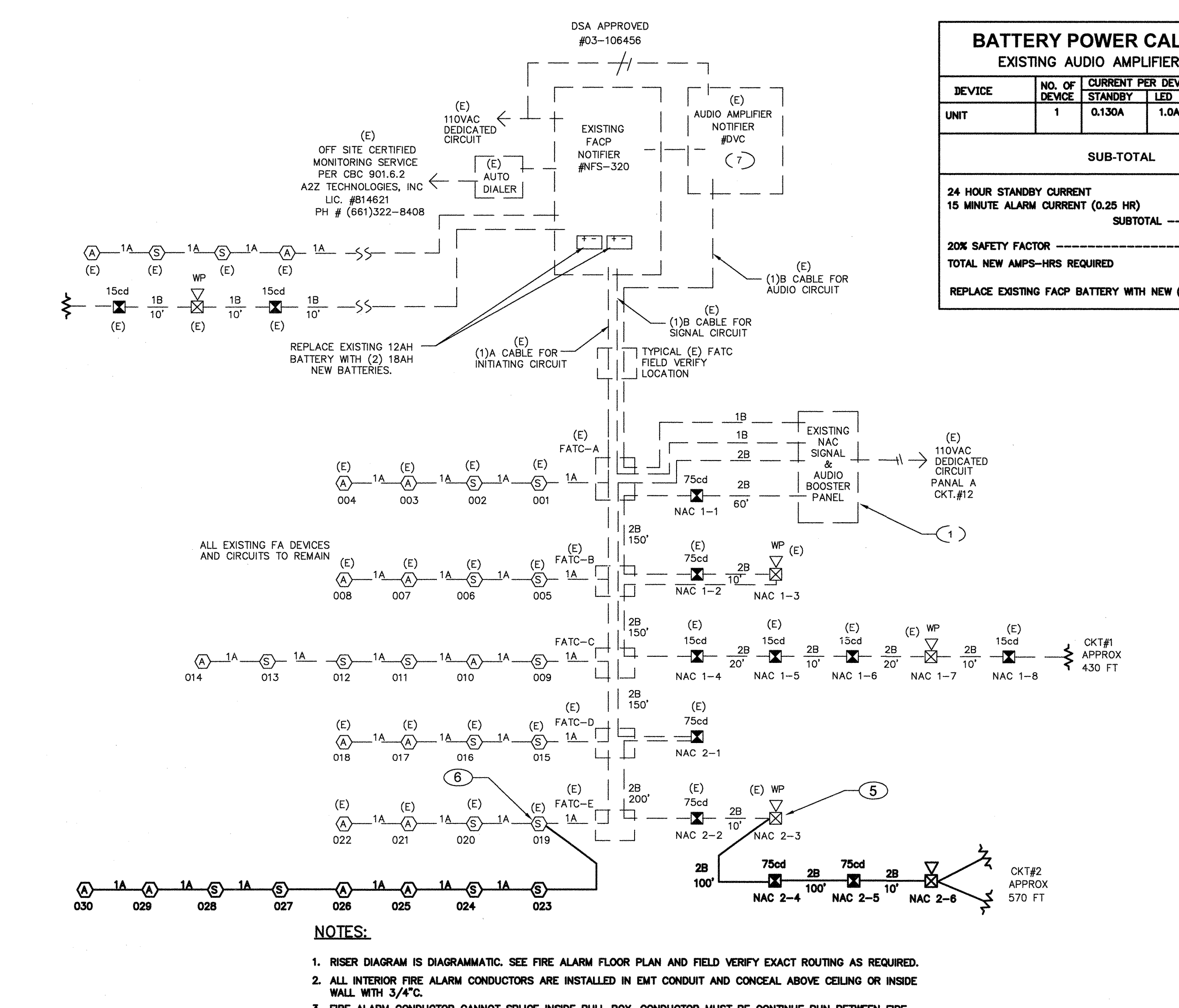


1" = 40'-0"
1" = 30'-0"
1" = 20'-0"
1" = 10'-0"
1/8" = 1'-0"
1/4" = 1'-0"



FIRE ALARM PLAN

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



FIRE ALARM RISER DIAGRAM

1. RISER DIAGRAM IS DIAGRAMMATIC. SEE FIRE ALARM FLOOR PLAN AND FIELD VERIFY EXACT ROUTING AS REQUIRED.
2. ALL INTERIOR FIRE ALARM CONDUCTORS ARE INSTALLED IN EMT CONDUIT AND CONCEAL ABOVE CEILING OR INSIDE WALL WITH 3/4" C.
3. FIRE ALARM CONDUCTOR CANNOT SPLICE INSIDE PULL BOX. CONDUCTOR MUST BE CONTINUE RUN BETWEEN FIRE ALARM DEVICES BACK BOX OR TERMINAL CABINET.

N.T.S.

BATTERY POWER CALCULATIONS EXISTING FACP

DEVICE	NO. OF DEVICES	CURRENT PER DEVICE	STANDBY CURRENT	LED CURRENT
EXISTING FIELD MEASURE			0.350A	0.365A
SMOKE DETECTOR	4	0.0003A	0.0012A	0.026A
HEAT DETECTOR	4	0.0003A	0.0012A	0.026A
SUB-TOTAL			0.3524A	0.407A
24 HOUR STANDBY CURRENT			8.458AH	
15 MINUTE ALARM CURRENT (0.25 HR)			0.102AH	
SUBTOTAL			8.560AH	
20% SAFETY FACTOR			1.212AH	
TOTAL NEW AMPS-HRS REQUIRED			10.272AH	

REPLACE EXISTING FACP BATTERY WITH NEW (2) 12AH BATTERIES

BATTERY POWER CALCULATIONS EXISTING AUDIO AMPLIFIER

DEVICE	NO. OF DEVICES	CURRENT PER DEVICE	STANDBY CURRENT	LED CURRENT
UNIT	1	0.130A	1.0A	1.0A
SUB-TOTAL			0.130A	1.0A
24 HOUR STANDBY CURRENT			3.120AH	
15 MINUTE ALARM CURRENT (0.25 HR)			0.250AH	
SUBTOTAL			3.370AH	
20% SAFETY FACTOR			0.674AH	
TOTAL NEW AMPS-HRS REQUIRED			4.044AH	

REPLACE EXISTING FACP BATTERY WITH NEW (2) 12AH BATTERIES

FA CABLE SCHEDULE

TYPE	DESCRIPTION
A	INITIATING CIRCUIT CABLE 2#16 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE VIA MIN. 3/4" CONDUIT INSTALLATION. WEST PENN #0990 OR EQUAL.
B	NAC SIGNAL CIRCUIT CABLE 2#12 AWG SOLID COPPER PVC JACKET POWER LIMITED FPLR CABLE VIA MIN. 3/4" CONDUIT INSTALLATION. WEST PENN #A0227 OR EQUAL.

BATTERY POWER CALCULATIONS EXISTING NAC SIGNAL & AUDIO BOOSTER PANEL

DEVICE	NO. OF DEVICES	CURRENT PER DEVICE	STANDBY CURRENT	ALARM CURRENT
EXISTING	1	0.120A	10.26A	10.26A
OUTDOOR SPEAKER	1	---	0.050A	---
MINI HORN	0	---	0.025A	---
VISUAL 15cd	0	---	0.041A	---
AUDIO/VISUAL 15cd	0	---	0.083A	---
AUDIO/VISUAL 30cd	0	---	0.114A	---
AUDIO/VISUAL 75cd	2	---	0.157A	---
AUDIO/VISUAL 110cd	0	---	0.197A	---
SYNC MODULES	0	---	0.045A	---
1.4W SPEAKER	14	---	0.01A	---
SUB-TOTAL			0.120A	10.784A
24 HOUR STANDBY CURRENT			2.880AH	
15 MINUTE ALARM CURRENT (0.25 HR)			2.681AH	
SUBTOTAL			5.571AH	
20% SAFETY FACTOR			1.114AH	
TOTAL AMPS-HRS REQUIRED			6.685AH	

REPLACE EXISTING FACP BATTERY WITH NEW (2) 12AH BATTERIES

VOLTAGE DROP CALCULATION

WORST CASE VOLTAGE DROP AT THE LAST DEVICE

VD = VOLTAGE DROP
I = TOTAL LOAD
K = 21.6
CM = CIRCULAR MILLS (CROSS SECTION OF 12 AWG = 6530)
V = VOLTAGE (24vdc)
VD = K * I * L / CM

SIGNAL CKT NO.	AMPERES	APPROX LENGTH	RESISTIVITY 2PM	WIRE AREA CM	VOLTS DROPPED	% VOLTS DROP	
0KT. A	0.571A	570'	21.6	12	6530	1.077V	4.5%

SIGNAL CIRCUIT LOAD SUMMARY

OUTDOOR SPEAKER	VISUAL 15cd	SPK/FR/FR/FR 15cd	SPK/FR/FR/FR 30cd	SPK/FR/FR/FR 75cd	SPK/FR/FR/FR 110cd	MINI HORN	SYNC MODULE	1.4W SPEAKER
0	0	0	0	3	0	0	0	0
0.571A								

FIRE ALARM SYMBOLS AND SCHEDULE

ITEM	DESCRIPTION	MODEL NUMBER	CSFM NUMBER	MOUNT	BACK BOX
[FACP]	(E) FACP FOR REFERENCE ONLY	NOTIFIER #NFS-320	7165-0028:243	+60"	EQUIPMENT CABINET
[NAC]	NAC SIGNAL AND AUDIO BOOSTER PANEL	WHEELLOCK #SPB-80/4	6911-0785:157	+60"	EQUIPMENT CABINET
[DVC]	DIGITAL VOICE COMMAND CENTER INTERCONNECT WITH (E) FACP IN ADMIN OFFICE	NOTIFIER #DVC SBB-C4 ADDR-C4 (#FS2-640)	7165-0028:243	+60"	EQUIPMENT CABINET
[S]	SPEAKER STROBE WITH EVACUATION SPEAKER	NOTIFIER #SPSV WR	7320-1653:201	+80"	4"SQ X 2 1/2"D
[WP]	OUTDOOR EVACUATION SPEAKER WITH WEATHERPROOF BOX	NOTIFIER #SPRK MBB	7320-1653:201	+90"	4"SQ X 2 1/2"D
[S]	ADDRESSABLE CEILING SMOKE DETECTOR WITH BASE	NOTIFIER #SP-851/B710P	7272-0028:206	CEILING	4"SQ X 2 1/2"D
[A]	ATTIC HEAT DETECTOR 180F TEMP WITH BASE	NOTIFIER #ST-851H/B710P	7270-0028:196	ATTIC	4"SQ X 2 1/2"D
[A]	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

1. THE AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AND AMENDED EITHER UIJFX OR UIJUS BY UNDERWRITERS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 2011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BE ARRANGED BY OWNER.

COMPLETE AUTOMATIC FIRE ALARM PLAN SUBMITTAL

1. 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.

2. 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 SUPERVISING 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 1008.2.4.2.2.1.5)

SHEET NOTES

- EXISTING FIRE ALARM SIGNAL AND AUDIO BOOSTER PANEL AND CONNECT TO (E) FACP PER RISER DIAGRAM. EXISTING 110V POWER CONNECTION AND DEDICATED CIRCUIT FROM PANEL A-12.
- LOCATE HEAT DETECTOR IN ATTIC AND SURFACE MOUNT ON THE BOTTOM OF RAFTER. DETECTOR COVERAGE WILL BE DERIVED 50% ACROSS THE RAFTER. FIELD VERIFY LOCATION WITH GENERAL CONTRACTOR AND PROVIDE ATTIC HEAT DETECTOR IN EACH BAY OF STRUCTURAL.
- PROVIDE 3/4" WEATHERPROOF FLEX CONDUIT BETWEEN BUILDING.
- EXISTING FIRE ALARM DIGITAL VOICE COMMAND CENTER AND INTER CONNECT TO EXISTING FIRE ALARM CONTROL PANEL AND SURFACE MOUNT NEXT TO (E) FACE. FIELD VERIFY EXACT LOCATION.
- EXTEND EXISTING NAC SIGNAL CIRCUIT TO NEW BUILDING PER PLANS. FIELD VERIFY EXACT LOCATION.
- EXTEND EXISTING INITIATING CIRCUIT TO NEW BUILDING PER PLANS. FIELD VERIFY EXACT 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 CIRCUITS. 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 TESTING CRITERIA. APPROVED TYPE OF MATERIALS SHALL BE IDENTIFIED WITHIN THE SPECIFICATION WITHIN THE FIRE ALARM SECTION.
- ALL MOUNTED VISUAL NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80" MINIMUM AND 96" MAXIMUM FROM FINISHED FLOOR.
- ALL MOUNTED AUDIBLE NOTIFICATION DEVICES SHALL HAVE THEIR TOPS MOUNTED AT 80" MINIMUM AND 100" MAXIMUM FROM FINISHED FLOOR AND NO CLOSER THAN 6" TO A HORIZONTAL STRUCTURE.
- AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 DECBELS (Db) 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 OCCUPYABLE 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 DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CADELLE. VISUAL DEVICES WITHIN 5' FROM EACH OTHER SHALL BE SYNCHRONIZED.
- UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATERTIGHT FITTINGS AND WIRE TO BE APPROVAL FOR WET LOCATIONS.
- ALL FIRE ALARM WIRING SHALL BE FLP OR PFLP (FIRE POWER LIMITED OR FIRE POWER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE THHN OR THWN.
- 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 3' 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 CEILING, UNDER FLOORS AND IN WALLS IN A 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 901.6.2.
- SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
- OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.

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