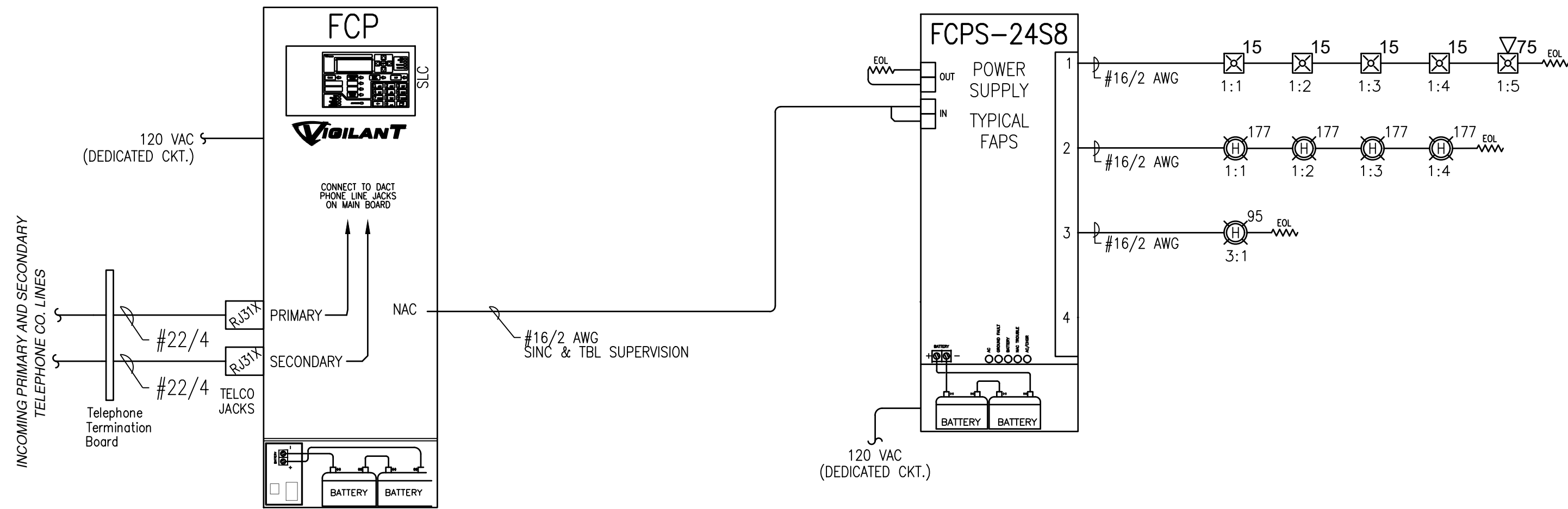
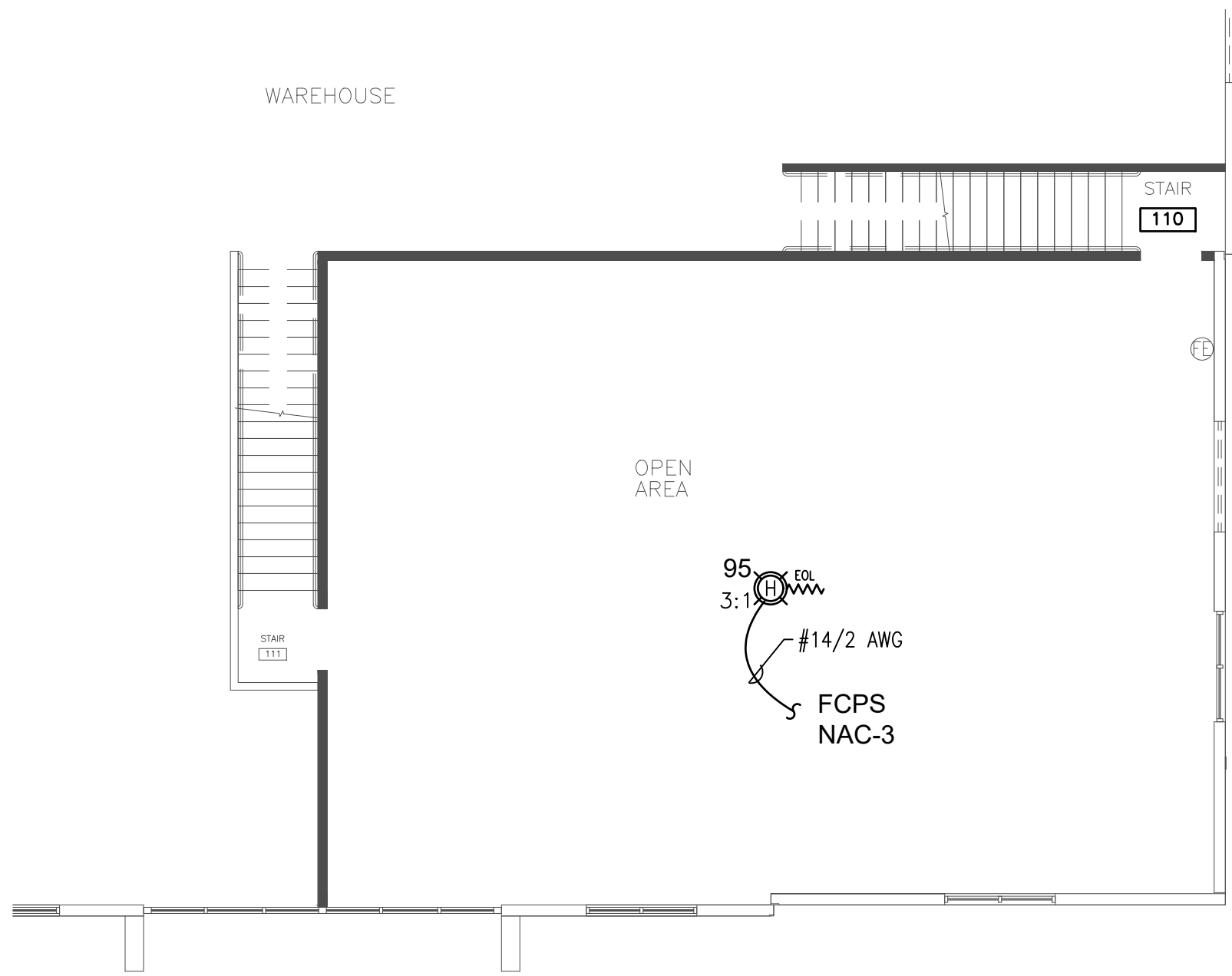
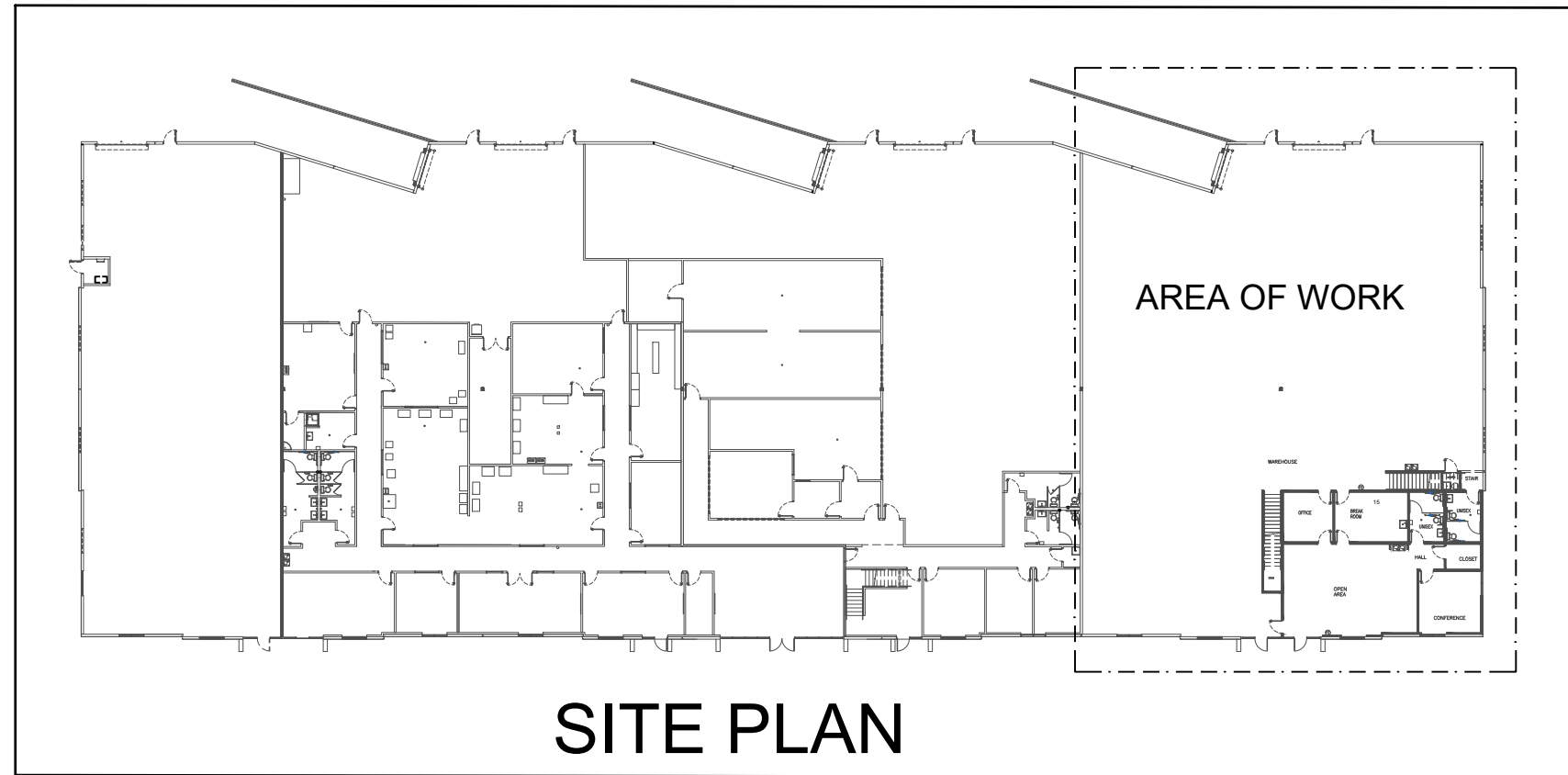


MAIN FLOOR  
FIRE ALARM PLAN  
SCALE: 1/8"=1'-0"



FIRE ALARM RISER DIAGRAM  
SCHEMATIC: NO SCALE



SECOND FLOOR  
FIRE ALARM PLAN  
SCALE: 1/8"=1'-0"

REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	3/13/2018

Mountainwest  
Security  
Systems  
THE ALARM SPECIALISTS

764 NORTH 400 WEST OREM, UT 801-226-6787

SPARKFISH TENANT IMPROVEMENT	
850 EAST MILL POND DRIVE, BLDG B - SUITE 100	
LEHI, UTAH	
FIRE ALARM PLAN	
DRAWN	JOHN STAMPS UNICAD JOB #18128
CHECKED	BRADY B. HAWS NICET III 138751
DATE	3/13/2018
REVISION	0
SCALE	1/8"=1'-0"

shop drawings  
created by  
5794 W. 4600 So.  
Hooper, UT 84315  
Office: 801.985.0410

UNICAD Inc.  
FIRE ALARM DESIGN & DRAFTING SERVICES

FA-1

FCPS Battery Calculation						3/12/2018
PROJECT NAME:		SPARKFISH TI				
Required Standby Time:		24 Hours				
Required Alarm Time:		5 Minutes				
AC Branch Current						
AC Branch Current:		Amps		Ⓢ	120V	
Regulated Load in Standby						
Device Type	Number of Devices		Current (Amps)		Total Current (Amps)	
FPS MAINBOARD – FCPS–2456	1	X	0.09100	=	0.09100	
TOTAL STANDBY LOAD					0.09100	
Regulated Load in ALARM						
Device Type	Number of Devices		Current (Amps)		Total Current (Amps)	
FPS MAINBOARD – FCPS–2456	1	X	0.14500	=	0.14500	
FPS NAC–1 (See Voltage Drop Calculations)	1	X	0.22600	=	0.22600	
FPS NAC–2 (See Voltage Drop Calculations)	1	X	1.16000	=	1.16000	
FPS NAC–3 (See Voltage Drop Calculations)	1	X	0.19400	=	0.19400	
TOTAL ALARM LOAD					1.72500	
Battery Requirements						
Standby Load			Required Standby Time in Hours			
Current (Amps)	0.09100	X	24.00000	=	2.18400	
Alarm Load			Required Alarm Time in Hours			
Current (Amps)	1.72500	X	0.08333	=	0.14375	
Total Ampere Hours (before derating factor)					2.32775	
Derating Factor					X 1.2	
TOTAL AMPERE HOURS REQUIRED				=	2.79330	
BATTERIES TO BE PROVIDED (2 – 12v)					7 AH	

Point to Point NAC Voltage Drop Calculation					3/12/2018
Project Name		SPARKFISH TI			
Circuit Number		FCPS–NAC1			
Nominal System Voltage	20.4	volts	Wire	Resistance	
Minimum Device Voltage	16.0	volts	Gauge	Per 1000	
Distance from source to 1st device	50	feet	14	3.07	
Wire Gauge for balance of circuit			14	3.07	
Max Output Current	3.00	amps			
Total Circuit Current	0.228	amps			
End of Line Voltage	20.26	volts			
Circuit is within limits					
	Device Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	VO15 (W)	0.043	50	20.33	0.069 0.34%
Device 2	VO15 (W)	0.043	15	20.31	0.086 0.42%
Device 3	VO15 (W)	0.043	25	20.29	0.108 0.53%
Device 4	VO15 (W)	0.043	35	20.27	0.129 0.63%
Device 5	AV15 (W)	0.054	25	20.26	0.137 0.67%
Totals	0.226	150			
Notes:					
Wire resistance is doubled in the calculations for two wires (Positive and Negative).					
The voltage calculated to the last device must not be lower than the manufactures listed minimum operating voltage (IE: rated operating voltage 16–33 VDC (24 VDC nominal)).					

Point to Point NAC Voltage Drop Calculation						3/12/2018
Project Name		SPARKFISH TI				
Circuit Number		FCPS–NAC3				
Nominal System Voltage	20.4	volts	Wire	Resistance		
Minimum Device Voltage	16.0	volts	Gauge	Per 1000		
Distance from source to 1st device	50	feet	14	3.07		
Wire Gauge for balance of circuit			14	3.07		
Max Output Current	3.00	amps				
Total Circuit Current	0.194	amps				
End of Line Voltage	20.34	volts				
Circuit is within limits						
	Device Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop	
Device 1	AV95 (C )	0.194	50	20.34	0.060 0.29%	
Totals	0.194	50				
Notes:						
Wire resistance is doubled in the calculations for two wires (Positive and Negative).						
The voltage calculated to the last device must not be lower than the manufactures listed minimum operating voltage (IE: rated operating voltage 16–33 VDC (24 VDC nominal)).						

Point to Point NAC Voltage Drop Calculation					3/12/2018	
Project Name		SPARKFISH TI				
Circuit Number		FCPS–NAC2				
Nominal System Voltage	20.4	volts	Wire	Resistance		
Minimum Device Voltage	16.0	volts	Gauge	Per 1000		
Distance from source to 1st device	70	feet	14	3.07		
Wire Gauge for balance of circuit			14	3.07		
Max Output Current	3.00	amps				
Total Circuit Current	1.160	amps				
End of Line Voltage	19.08	volts				
Circuit is within limits						
	Device Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop	
Device 1	AV177 (C	0.290	70	19.90	0.499	2.44%
Device 2	AV177 (C	0.290	70	19.53	0.872	4.28%
Device 3	AV177 (C	0.290	90	19.21	1.193	5.85%
Device 4	AV177 (C	0.290	70	19.08	1.318	6.46%
Totals	1.160	300				
Notes:						
Wire resistance is doubled in the calculations for two wires (Positive and Negative).						
The voltage calculated to the last device must not be lower than the manufactures listed minimum operating voltage (IE: rated operating voltage 16–33 VDC (24 VDC nominal)).						

GENERAL NOTES:

- SCOPE OF WORK: EXPANDING ONTO AN EXISTING VIGILANT FIRE ALARM SYSTEM WITH NECESSARY NOTIFICATION A SHOWN ON SHEET FA–2. FIRE ALARM EQUIPMENT SHALL BE INSTALLED ALL CODE AND STATE REQUIREMENTS SUCH AS NFPA–72 AS A MINIMUM.
- THESE DRAWINGS ARE DIAGRAMMATIC. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
- INSTALLATION SHALL COMPLY WITH NEC, NFPA 72 AND ALL OTHER APPLICABLE CODES AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- WIRING DEPICTED ON THESE PLANS IS SCHEMATIC – ACTUAL WIRE LOCATIONS MAY DIFFER FROM THESE PLANS. WIRING SHALL BE PERFORMED AS ACTUAL BUILDING CONSTRUCTION CONDITIONS ALLOW AND TO MINIMIZE PENETRATIONS THROUGH AREA SEPARATION WALLS AND FIRE WALLS. THE USE OF A RACEWAY IS PERMITTED AS LONG AS NO 110V OR HIGHER VOLTAGE CABLES ARE IN THE SAME RACEWAY.
- FIRE RATINGS SHALL BE MAINTAINED FOR ALL PENETRATIONS THROUGH FIRE–RATED CONSTRUCTION.
- POWER FOR ALL FIRE ALARM PANELS AND FIRE ALARM POWER SUPPLIES MUST BE PROVIDED BY A DEDICATED AC BRANCH CIRCUIT. THE LOCATION OF THE BRANCH CIRCUIT BREAKER SHALL BE PERMANENTLY IDENTIFIED AT THE CONTROL UNIT AND SHALL HAVE A RED MARKING IN ACCORDANCE WITH NFPA 72.
- POWER–LIMITED AND NONPOWER–LIMITED CIRCUIT WIRING MUST REMAIN SEPARATED IN CABINET. ALL POWER–LIMITED CIRCUIT WIRING MUST REMAIN AT LEAST 0.25" AWAY FROM ANY NONPOWER–LIMITED CIRCUIT WIRING. FURTHERMORE, ALL POWER–LIMITED AND NONPOWER–LIMITED CIRCUIT WIRING MUST ENTER AND EXIT THE CABINET THROUGH DIFFERENT KNOCK OUTS AND/OR SEPARATE CONDUITS.
- WHEN UTILIZING SHIELDED CABLE TIE SHIELDS THROUGH AND INSULATE AT EACH JUNCTION BOX. INSULATE AND TAPE BACK AT END.
- ALL FIRE ALARM CABLING SHALL BE ACCEPTABLE TO THE FIRE ALARM EQUIPMENT MANUFACTURER FOR THE INTENDED PURPOSE.
- SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER CONSTRUCTION CLEAN–UP IS COMPLETED AND FINAL.
- LOCATE SMOKE DETECTORS A MINIMUM OF THREE (3) FEET FROM MECHANICAL DIFFUSERS. WALL–MOUNTED SMOKE DETECTORS SHALL BE LOCATED A MINIMUM OF 4" AND A MAXIMUM OF 12" FROM CEILING.
- PROVIDE SYNCHRONIZATION OF ALL VISUAL NOTIFICATION APPLIANCE CIRCUITS. PROVIDE ALL REQUIRED SYNC MODULES. PROVIDE A MULTI–SYNC MODE SLAVE CONNECTION BETWEEN ALL SYNC MODULES.
- VERIFY ALL FIELD SELECTABLE AUDIBILITY SETTINGS OF NOTIFICATION APPLIANCES WITH FIRE ALARM CONTRACTOR.
- UPON COMPLETION OF THE FIRE ALARM SYSTEM INSTALLATION AND PROGRAMMING, THE INSTALLING CONTRACTOR SHALL PERFORM FINAL TESTING OF THE ENTIRE SYSTEM, PER ALL APPLICABLE CODES, AND SHALL COORDINATE AND PERFORM A FINAL FIRE ALARM SYSTEM INSPECTION.
- PROVIDE OFF–SITE MONITORING AS REQUIRED BY THE INTERNATIONAL FIRE CODE, SECTION 907.6.5 AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- INSTALLING CONTRACTOR SHALL, PHYSICALLY, LABEL ALL INITIATING DEVICES AND NOTIFICATION APPLIANCE CIRCUIT END OF LINE (WHEN WIRING CLASS "B"). THESE LABELS SHALL BE IN PLACE PRIOR TO START–UP AND TESTING.

FIRE ALARM SYMBOL LEGEND		
NOTE: ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT		
SYMBOL	DESCRIPTION	MOUNTING
	FIRE ALARM CONTROL PANEL	WALL–TOP Ⓢ 66"
	FIRE ALARM POWER SUPPLY	FIELD VERIFY
	SMOKE DETECTOR	CEILING
	MANUAL PULL STATION	WALL Ⓢ 48"
	CEILING MOUNT HORN / STROBE	FIELD VERIFY
	STROBE	WALL 80"–96"
ABBREVIATION	DESCRIPTION	 
E	EXISTING	
G	WITH GUARD	
P	PENDANT MOUNT	
R	RESIDENTIAL (110V)	
S	SOUNDER BASE	 (L – DENOTES LOOP #) (D or M – DENOTES DETECTOR OR MODULE #)
WP	WEATHER PROOF	
EOL	END OF LINE RESISTOR	
EOLR	END OF LINE RELAY	
AWG	AMERICAN WIRE GAUGE	
TWP	TWISTED PAIR	 WIRE TYPE ABBREVIATED CONDUCTOR COUNT WIRE SIZE # OF CABLES (IF OMITTED ONLY 1 CABLE NEEDED)
TWSP	TWISTED SHIELDED PAIR	
FPLP	FIRE POWER LIMITED PLENUM	
FPLR	FIRE POWER LIMITED RISER	
NAC	NOTIFICATION APPLIANCE CIRCUIT	
SLC	SIGNALING LINE CIRCUIT	

OPERATIONS MATRIX									
FIRE ALARM INPUT	FIRE ALARM OUTPUT	ACTIVATE ALARM INDICATOR	ACTIVATE AUDIBLE ALARM	ACTIVATE SUPERVISORY INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE TROUBLE INDICATOR	ACTIVATE AUDIBLE TROUBLE INDICATOR	TRANSMIT ALARM SIGNAL	TRANSMIT SUPERVISORY SIGNAL
SMOKE DETECTORS	●	●						●	
PULL STATIONS	●	●						●	
WATERFLOW SWITCHES	●	●						●	
VALVE TAMPER SWITCHES			●	●					●
FIRE ALARM AC POWER FAIL						●	●		
FIRE ALARM LOW BATTERY						●	●		●
OPEN CIRCUIT									●
GROUND FAULT						●	●		●
NAC SHORT CIRCUIT						●	●		●
LOSS OF AC TO BUILDING						●	●		●

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**850 EAST MILL POND DRIVE, BLDG B - SUITE 100**  
**LEHI, UTAH**  
**FIRE ALARM PLAN**

DRAWN	JOHN STAMPS UNICAD JOB #18128
CHECKED	BRADY B. HAWS NICET III 138751
DATE	3/13/2018
REVISION	0
SCALE	1/8"=1'–0"

FA-2