Existing FACP Battery Calculation

10/14/2016

PROJECT NAME:	SPOTME TI				
Required Standby Time:	24	Hours			
Required Alarm Time:	5	Minutes			
Regulated Load in Standby					
Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
NOT-BG12LX PULL STATION	3	X	0.00038	=	0.00114
TOTAL STANDBY LOAD					0.00114
Regulated Load in ALARM					
Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
NOT-BG12LX PULL STATION	3	X	0.00500	=	0.01500
TOTAL ALARM LOAD					0.01500
Battery Requirements					
Standby Load			Required Standby Time in Hours		
Current (Amps)	0.00114	X	24.00000	=	0.02736
Alarm Load			Required Alarm Time in Hours		
Current (Amps)	0.01500	X	0.08333	=	0.00125
Total Ampere Hours (before derating factor)					0.02861
Derating Factor				X	1.2
TOTAL AMPERE HOURS REQUIRED				=	0.03433
BATTERIES TO BE PROVIDED (2 - 12v)					FIELD VERIFY

NOTE: THE ABOVE BATTERY CALCULATION IS A COMBINED TOTAL OF THE ADDITIONAL LOADS THAT WILL BE ADDED FROM THE SCOPE OF THIS PROJECT. FIELD VERIFY THE SIZE OF THE EXISTING BATTERIES AND UPSIZE ACCORDINGLY.

Existing FPS Battery Calculation

10/14/2016

PROJECT NAME:	SPOTME TI				
Required Standby Time:	24	Hours			
Required Alarm Time:	5	Minutes			
AC Branch Current					
AC Branch Current:	3.2	Amps	@	120V	
Regulated Load in Standby					
Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
FPS ALTRONIX AL802ULADA MAINBOARD	1	X	0.09000	=	0.09000
TOTAL STANDBY LOAD					0.09000
Regulated Load in ALARM					
Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
FPS ALTRONIX AL802ULADA MAINBOARD	1	X	0.17500	=	0.17500
FPS Ckt-1 (Existing)	1	X	0.97400	=	0.97400
FPS Ckt-2 (Existing)	1	X	0.70200	=	0.70200
FPS Ckt-3 (See Voltage Drop Calculations)	1	X	1.93500	=	1.93500
FPS-4 (Spare)		X	0.00000	=	0.00000
TOTAL ALARM LOAD					3.78600
Battery Requirements					
Standby Load			Required Standby Time in Hours		
Current (Amps)	0.09000	X	24.00000	=	2.16000
Alarm Load			Required Alarm Time in Hours		
Current (Amps)	3.78600	X	0.08333	=	0.31550
Total Ampere Hours (before derating factor)					2.47550
Derating Factor				X	1.2
TOTAL AMPERE HOURS REQUIRED				=	2.97060
BATTERIES TO BE PROVIDED (2 - 12v)					7 AH

Point to Point NAC Voltage Drop Calculation

10/14/2016

Project Name	SPOTME TI			
Circuit Number	FPS Spare Ckt.			
Nominal System Voltage	20.4	volts	Wire Gauge	Resistance Per 1000
Minimum Device Voltage	16.0	volts		
Distance from source to 1st device	50	feet	14	3.07
Wire Gauge for balance of circuit			14	3.07
Max Output Current	2.50	amps		
Total Circuit Current	1.935	amps		
End of Line Voltage	17.88	volts		

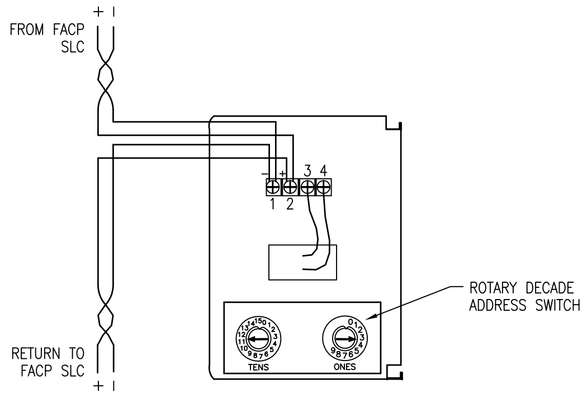
Circuit is within limits

	Device Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.212	50	19.81	0.594	2.91%
Device 2	0.176	35	19.44	0.964	4.73%
Device 3	0.066	26	19.19	1.211	5.94%
Device 4	0.176	5	19.14	1.257	6.16%
Device 5	0.079	11	19.06	1.345	6.59%
Device 6	0.107	36	18.78	1.616	7.92%
Device 7	0.066	18	18.66	1.740	8.53%
Device 8	0.079	21	18.52	1.875	9.19%
Device 9	0.066	3	18.51	1.893	9.28%
Device 10	0.066	7	18.47	1.932	9.47%
Device 11	0.066	20	18.36	2.036	9.98%
Device 12	0.079	32	18.21	2.188	10.73%
Device 13	0.079	13	18.16	2.244	11.00%
Device 14	0.176	9	18.12	2.278	11.17%
Device 15	0.066	23	18.06	2.340	11.47%
Device 16	0.066	19	18.02	2.384	11.69%
Device 17	0.212	65	17.89	2.508	12.29%
Device 18	0.098	26	17.88	2.524	12.37%
Totals	1.935	419			

Notes:
Wire resistance is doubled in the 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)).

TI OPERATIONS MATRIX

FIRE ALARM INPUT	FIRE ALARM OUTPUT	ACTIVATE ALARM INDICATOR	ACTIVATE AUDIBLE ALARM	ACTIVATE TROUBLE INDICATOR	ACTIVATE AUDIBLE TROUBLE INDICATOR	TRANSMIT ALARM SIGNAL	TRANSMIT TROUBLE SIGNAL
PULL STATIONS		●	●			●	
FIRE ALARM AC POWER FAIL				●	●		●
FIRE ALARM LOW BATTERY				●	●		●
OPEN CIRCUIT				●	●		●
GROUND FAULT				●	●		●
NAC SHORT CIRCUIT				●	●		●
LOSS OF AC TO BUILDING				●	●		●



MANUAL PULL STATION WIRING DETAIL

SCHEMATIC: NO SCALE

GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
2. INSTALLATION SHALL COMPLY WITH NEC, NFPA 72 AND ALL OTHER APPLICABLE CODES AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
3. 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.
4. FIRE RATINGS SHALL BE MAINTAINED FOR ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION.
5. POWER FOR ALL FIRE ALARM PANELS AND FIRE ALARM POWER SUPPLIES MUST BE PROVIDED BY A DEDICATED AC BRANCH CIRCUIT.
6. 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.
7. WHEN UTILIZING CLASS "A" CIRCUITS, SEPARATE OUTGOING AND RETURN CONDUCTORS OF CLASS "A" CIRCUITS BY A MINIMUM OF 12" WHERE RUN VERTICALLY AND 48" WHERE RUN HORIZONTALLY.
8. WHEN UTILIZING SHIELDED CABLE TIE SHIELDS THROUGH AND INSULATE AT EACH JUNCTION BOX. INSULATE AND TAPE BACK AT END.
9. ALL FIRE ALARM CABLING SHALL BE ACCEPTABLE TO THE FIRE ALARM EQUIPMENT MANUFACTURER FOR THE INTENDED PURPOSE.
10. SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER CONSTRUCTION CLEAN-UP IS COMPLETED AND FINAL.
11. 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. CEILING-MOUNTED SMOKE DETECTORS SHALL BE MOUNTED ON CEILINGS AND NOT ON THE BOTTOMS OF BEAMS OR JOISTS.
12. PROVIDE SYNCHRONIZATION OF ALL VISUAL NOTIFICATION APPLIANCE CIRCUITS. PROVIDE ALL REQUIRED SYNC MODULES. PROVIDE A MULTI-SYNC MODE SLAVE CONNECTION BETWEEN ALL SYNC MODULES.
13. VERIFY ALL FIELD SELECTABLE AUDIBILITY SETTINGS OF NOTIFICATION APPLIANCES WITH FIRE ALARM CONTRACTOR.
14. 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.
15. PROVIDE OFF-SITE MONITORING AS REQUIRED BY THE INTERNATIONAL FIRE CODE, SECTION 907.15 AND THE LOCAL AUTHORITY HAVING JURISDICTION.
16. 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
FCP	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
FPS	FIRE ALARM POWER SUPPLY	FIELD VERIFY
FSA	FIRE SYSTEM ANNUNCIATOR	WALL-TOP @ 66"
FSD	FIRE/SMOKE DAMPER	BY OTHERS
S	SMOKE DETECTOR	CEILING
S	DUCT SMOKE DETECTOR	BY OTHERS
H	HEAT DETECTOR	CEILING
CM	ADDRESSABLE CONTROL MODULE	FIELD VERIFY
MM	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
P	MANUAL PULL STATION	WALL @ 48"
R	CONTROL RELAY (MULTI-VOLTAGE)	FIELD VERIFY
RM	ADDRESSABLE RELAY MODULE	FIELD VERIFY
KB	KNOX BOX	FIELD VERIFY
	WATER FLOW SWITCH	BY OTHERS
	VALVE TAMPER SWITCH	BY OTHERS
	BELL	BY OTHERS
	CEILING MOUNT STROBE	FIELD VERIFY
H	CEILING MOUNT HORN / STROBE	FIELD VERIFY
S	CEILING MOUNT SPEAKER / STROBE	FIELD VERIFY
	MINI HORN	WALL @ 10'-0
	HORN / STROBE	WALL 80"-96"
SS	SPEAKER / STROBE	WALL 80"-96"
SP	SPEAKER	WALL @ 90"
	STROBE	WALL 80"-96"

ABBREVIATION	DESCRIPTION
E	EXISTING
G	WITH GUARD
P	PENDENT MOUNT
R	RESIDENTIAL (110V)
S	SOUNDER BASE
WP	WEATHER PROOF
EOL	END OF LINE RESISTOR
EOLR	END OF LINE RELAY
AWG	AMERICAN WIRE GAUGE
TWP	TWISTED PAIR
TWSP	TWISTED SHIELDED PAIR
FPLP	FIRE POWER LIMITED PLENUM
FPLR	FIRE POWER LIMITED RISER

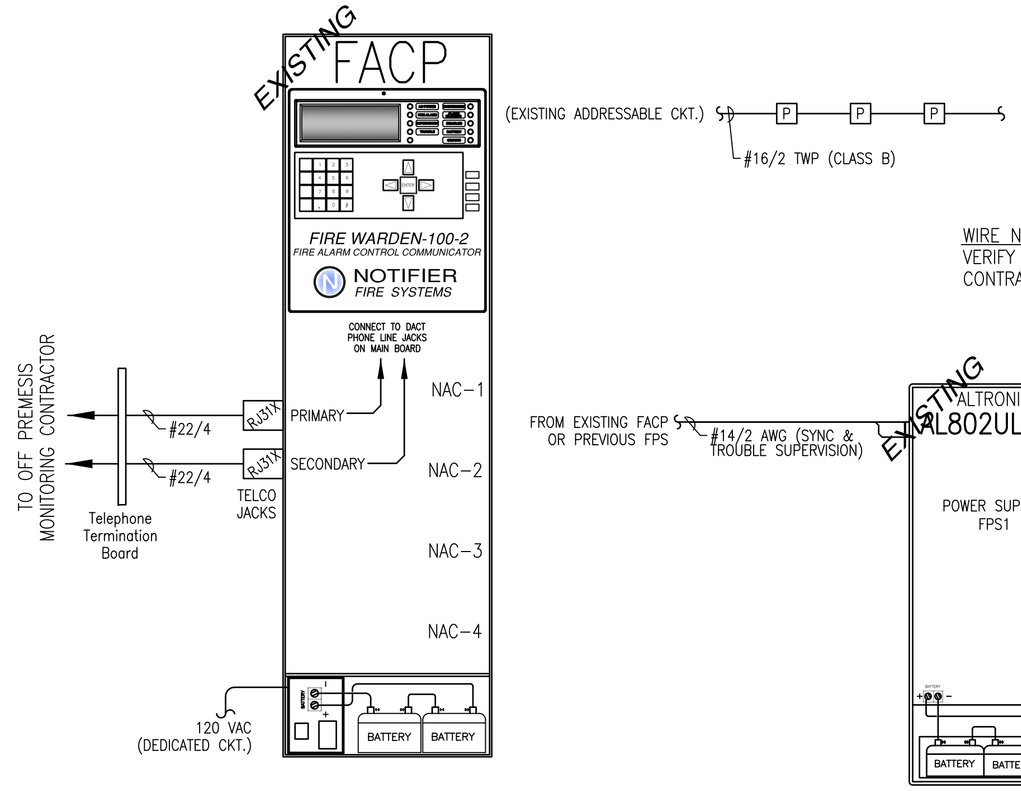
SPEAKER WATTAGE (2W) 75 STROBE CANDELA 30

2 DEVICE ADDRESS 1
L1D001 OR D01
(L - DENOTES LOOP #)
(D or M - DENOTES DETECTOR OR MODULE #)

1-#16/2 TWP
WIRE TYPE ABBREVIATED
CONDUCTOR COUNT
WIRE SIZE
OF CABLES (IF OMITTED ONLY 1 CABLE NEEDED)

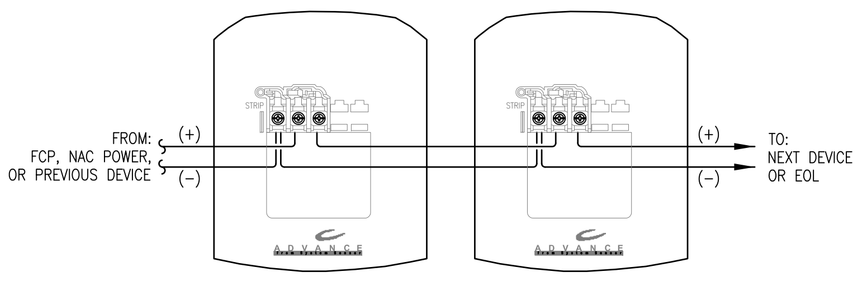
APPLICABLE CODES:

MAINE UNIFORM ENERGY & BUILDING CODE
PORTLAND CITY CODE, CHAPTER10, FIRE PREVENTION & PROTECTION
NFPA 1, FIRE CODE, & NFPA 101, LIFE SAFETY CODE



FIRE ALARM RISER DIAGRAM

SCHEMATIC: NO SCALE



TYPICAL 2 WIRE STROBE WIRING DETAIL

SCHEMATIC: NO SCALE

RESERVED FOR CITY STAMP

REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	10/14/2016

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SPOTME TI
75 WASHINGTON AVENUE
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CALCS, DETAILS, LEGEND, MATRIX, NOTES

DRAWN	JPB UNICAD JOB #16809
CHECKED	WAYNE B. HAWS NICET IV 90496
DATE	10/14/2016
REVISION	0
SCALE	1/8"=1'-0"

FA-1