

FACP Battery Calculation

3/20/2016

PROJECT NAME: 233 CUMBERLAND			
Required Standby Time:	24 Hours		
Required Alarm Time:	5 Minutes		
AC Branch Current			
AC Branch Current:	120V		
Regulated Load in Standby			
Device Type	Number	Current (Amps)	Total Current (Amps)
MS-3050 - FACP MAINS AND BATTERY	1	0.04000	0.04000
7788FUP - RADIO TRANSMITTER	5	0.00003	0.00015
SD355 - SMOKE DETECTOR	2	0.00038	0.00076
MMF301 - MONITOR MODULE	10	0.00038	0.00380
B6-12LX - PULL STATION	1	0.00038	0.00038
ANN-80 - ANNUNCIATOR	1	0.00038	0.00038
TOTAL STANDBY LOAD			
		0.16509	
Regulated Load in Alarm			
Device Type	Number	Current (Amps)	Total Current (Amps)
MS-3050 - FACP MAINS AND BATTERY	1	0.12000	0.12000
7788FUP - RADIO TRANSMITTER	5	0.00660	0.03300
SD355 - SMOKE DETECTOR	2	0.00060	0.00120
MMF301 - MONITOR MODULE	10	0.00500	0.05000
B6-12LX - PULL STATION	1	0.73500	0.73500
ANN-80 - ANNUNCIATOR	1	0.91000	0.91000
FACP-1 (See Voltage Drop Calculations)	1	0.23900	0.23900
FACP-2 (See Voltage Drop Calculations)	1	0.23900	0.23900
TOTAL ALARM LOAD			
		2.08700	
Battery Requirements			
Standby Load Current (Amps)	0.16509	Required Standby Time in Hours	24.00000
	X	Required Time in Hours	3.29216
Total Ampere Hours (before derating factor)	2.08700	X	0.17392
Derating Factor			4.13508
TOTAL AMPERE HOURS REQUIRED			1.2
BATTERIES TO BE PROVIDED (2 - 12V)			
			4.96329
			7.441

Point to Point NAC Voltage Drop Calculation

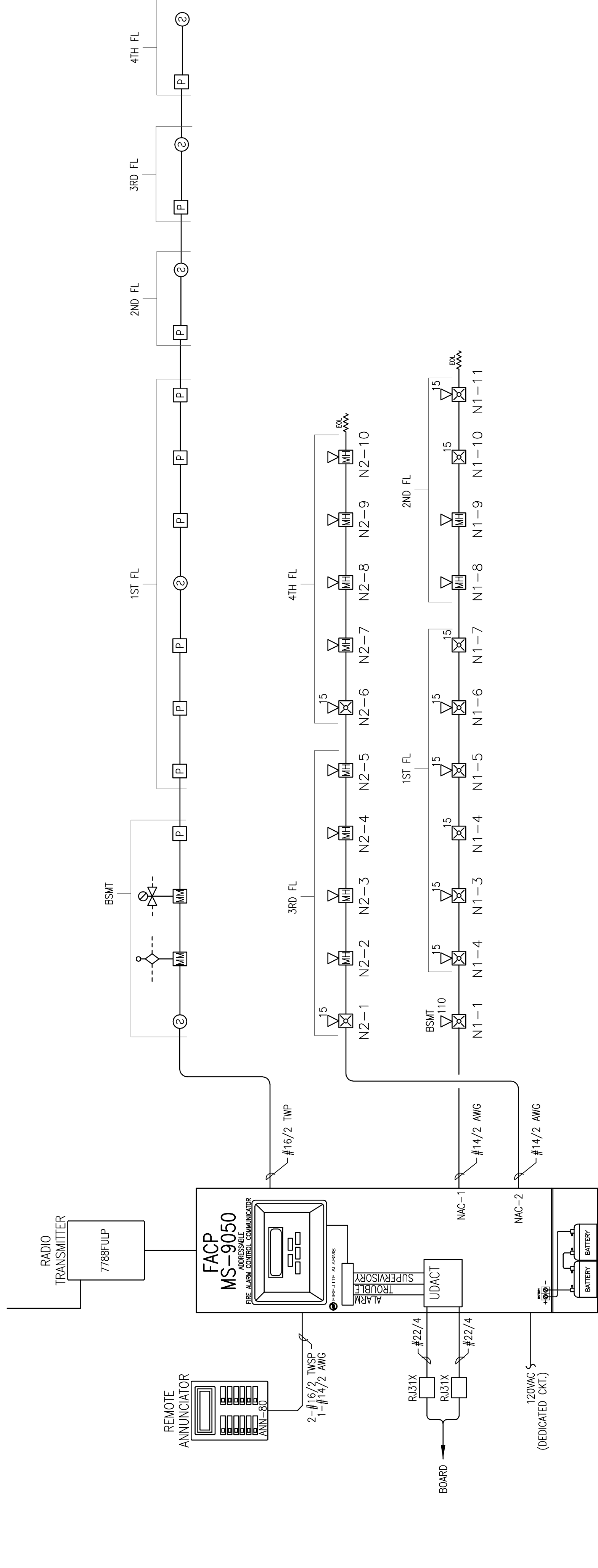
3/20/2016

Project Name: 233 CUMBERLAND					
Circuit Number: FACP-1					
Nominal System Voltage	20.4 volts				
Minimum Device Voltage	16.0 volts				
Distance from source to 1st device	40 feet				
Wire Gauge for balance of circuit	14				
Resistance Per 1000	3.07				
Wire Gauge	14				
Max Output Current	3.00 amps				
Total Circuit Current	0.813 amps				
End of Line Voltage	19.46 volts				
Circuit is within limits					
Device 1	AV-110	0.066	20.20	0.200	0.96%
Device 2	AV-15	0.212	19.93	0.475	2.33%
Device 3	AV-15	0.066	19.89	0.508	2.49%
Device 4	AV-15	0.066	19.78	0.623	3.05%
Device 5	AV-15	0.079	19.63	0.771	3.78%
Device 6	AV-15	0.066	19.58	0.821	4.03%
Device 7	VO-15	0.066	19.53	0.866	4.25%
Device 8	MH	0.079	19.48	0.908	4.43%
Device 9	MH	0.079	19.48	0.921	4.51%
Device 10	VO-15	0.066	19.48	0.938	4.60%
Device 11	AV-15	0.079	19.46	0.938	4.60%
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 (E: rated operating voltage 16-33 VDC (24 VDC nominal)).					

Point to Point NAC Voltage Drop Calculation

3/20/2016

Project Name: 233 CUMBERLAND						
Circuit Number: FACP-2						
Nominal System Voltage	20.4 volts					
Minimum Device Voltage	16.0 volts					
Distance from source to 1st device	100 feet					
Wire Gauge for balance of circuit	14					
Resistance Per 1000	3.07					
Wire Gauge	14					
Max Output Current	3.00 amps					
Total Circuit Current	0.294 amps					
End of Line Voltage	20.07 volts					
Circuit is within limits						
Device 1	AV-15	0.079	100	20.22	0.181	0.88%
Device 2	MH	0.017	15	20.20	0.200	0.98%
Device 3	MH	0.017	15	20.18	0.219	1.07%
Device 4	MH	0.017	30	20.15	0.252	1.23%
Device 5	MH	0.017	15	20.13	0.267	1.31%
Device 6	AV-15	0.079	15	20.12	0.281	1.36%
Device 7	MH	0.017	15	20.09	0.312	1.55%
Device 8	MH	0.017	15	20.08	0.324	1.59%
Device 9	MH	0.017	35	20.08	0.324	1.59%
Device 10	MH	0.017	15	20.07	0.325	1.60%
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 (E: rated operating voltage 16-33 VDC (24 VDC nominal)).						



FIRE ALARM RISER DIAGRAM
SCHEMATIC: NO SCALE

REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	3/20/2016

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**223 CUMBERLAND AVENUE
477 CONGRESS STREET
PORTLAND, MAINE 04101
FIRE ALARM PLAN - RISER**

DRAWN	JS	UNICAD JOB #16171
CHECKED	WAYNE B. HAWES	NCET IV 90496
DATE	3/18/2016	
REVISION	0	
SCALE	1/4"=1'-0"	

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