

Casco Bay Ferry Terminal

Portland, ME

Booster Calculations

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FF8 HORN/STROBE BOOSTER PANEL STANDBY BATTERY CALCULATION

Candela Current (ma) Panel	E50 Speaker/Strobe				STR Strobe Only			Quiescent Supervisory Current	Alarm Current	Remaining % of Ckt Capacity	
	15cd	30cd	75cd	110cd	15cd	30cd	75cd				
	41	63	109	140	57	85	135	0.0300			
Circuit 1	3	6			3				0.6720	77.60 %	
Circuit 2	1	1	3		6				0.7730	74.23 %	
Circuit 3	2	2	3		4				0.7630	74.57 %	
Circuit 4	1	2	5		3				0.8830	70.57 %	
								0.0300	3.0910		
All currents are expressed as 24Vdc mA. Max current per ckt = 3.0 Amps. Max current per panel = 10.0 Amps.								Total Quiescent	Total Alarm	69.09 %	Remaining % Panel

Total Quiescent Amp x Time Required (60 Hours) 1.800 AmpHr
 Total Alarm Amp x Time Required (15 Minutes) 0.773 AmpHr
 Total Battery Required 2.573 AmpHr
 Total Battery Required + 15% **2.959** AmpHr
 Battery Supplied **7.2** AmpHr

(Based on 24VDC RMS w/ Max Voltage Drop of 3.4VDC)

Field Ckt	E50 Speaker/Strobe				STR Strobe Only			Total Circuit Current Amps	Ω per 1000' Pair		Voltage Drop
	15cd	30cd	75cd	110cd	15cd	30cd	75cd		12AWG (3.5)	14AWG (5.2)	
1	41	63	109	140	57	85	135	0.6720	Length	Length	3.4VDC
2	3	6	0	0	3	0	0	0.7730	1446	973	3.4VDC
3	1	1	3	0	6	0	0	0.7630	1257	846	3.4VDC
4	2	2	3	0	4	0	0	0.8830	1273	857	3.4VDC
4	1	2	5	0	3	0	0	0.8830	1100	740	3.4VDC

Formulas used:

$$R_t = (D) \times (R_w) / 1000'$$

$$V_D = (R_t) \times (I_t)$$

Substitute for (R_t) and solve

$$D = ((3.4) \times (1000)) / ((R_w) \times (I_t))$$

R_t = Total Circuit Resistance
 D = Total Circuit Length (Feet)
 R_w = Wire Resistance per 1000' Pair
 V_D = Circuit Voltage Drop (Max allowed is 3.4Vdc)
 I_t = Total Circuit Current