Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 07/29/13

## Bay State Bldg - 2nd, 3rd, & 4th Floor Renovation

## Booster Power Supply Standby Battery Calculations

### Strobe Booster Panel 1 (BPS10A)

| | G1RF-HDVM Horn/Strobe (20v) | | | | G1RF-VM (20v) Strobe Unit | | | | GCF-VM (20v) Strobe Unit | | | | Quiescent (Amp) | Alarm I (Amp) | Spare Capacity (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15cd | 30cd | 75cd | 95cd | 15cd | 30cd | 75cd | 110cd | 15cd | 30cd | 75cd | 95cd | | | |
| | 88 | 109 | 193 | 248 | 71 | 98 | 188 | 240 | 74 | 108 | 205 | 244 | | | |
| Panel | | | | | | | | | | | | | 0.0700 | | |
| Circuit 1 | 1 | | 3 | | 6 | | | | | | | | | 1.0930 | 56.28 |
| Circuit 2 | | | | | | | | | | | | | | 0.0000 | 100 |
| | | | | | | | | | | | | | **0.0700** | **1.0930** | 83.1846 |
| | | | | | | | | | | | | | Total Quies | Total Alarm | |

**All currents are expressed as mA.**
**Max current per ckt = 2.5 Amps. Max current per panel = 10 Amps.**

| | | |
|---|---|---|
| Total Quiescent Amp x Time Required (24 Hours) | 1.680 | AmpHr |
| Total Alarm Amp x Time Required (15 Minutes) | 0.273 | AmpHr |
| Total Battery Required | 1.953 | AmpHr |
| Total Battery Required + 20% | **2.344** | AmpHr |
| Battery Supplied | **7.2** | AmpHr |

## NAC Circuit Voltage Drop/Maximum Length Calculations

**Formulas Used:**

**$R_t$ = (D) x ($R_w$) / 1000'**
**$V_d$ = ($R_t$) x ($I_t$)**
**Substitute for ($R_t$) and solve for D**
**D = ((4.0) x (1000)) / (($R_w$) x ($I_t$))**

**Rt=** Total Circuit Resistance
**D=** Distance Total
**Rw=** Wire Resistance (Per 1,000' Pair)
**Vd=** Voltage Drop
**It=** Total Circuit Current

**Notes:**

1. **NAC Circuit terminal voltage 24Vdc.**
2. **A maximum allowable voltage drop of 4Vdc will provide a minimum of 20 Vdc per circuit.**
3. **Current values listed per device are based on 20Vdc.**

### STROBE CIRCUIT MAX WIRE LENGTH CALCULATION

| | G4RF-S2VM Speaker/Strobe (20v) | | | | G1RF-VM (20v) Strobe Unit | | | | GCF-VM (20v) Strobe Unit | | | | Total Circuit Current | Ω per 1000' Pair | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15cd | 30cd | 75cd | 95cd | 15cd | 30cd | 75cd | 110cd | 15cd | 30cd | 75cd | 95cd | | | |
| | 88 | 109 | 193 | 248 | 71 | 98 | 188 | 240 | 74 | 108 | 205 | 244 | | 14AWG (5.2Ω) | 12AWG (3.9Ω) |
| Circuit 1 | 1 | 0 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0930 | 703.78 Ft | 938.37 Ft |
| Circuit 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0000 | #DIV/0! Ft | #DIV/0! Ft |