UNE - Ludcke Auditorium
Portland, Maine
NAC Circuit Voltage Drop/Maximum Length Calculations

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Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 07/30/13

Formulas Used:

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

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

Substitute for (R_t) and solve for D

$D = ((4.0) \times (1000)) / ((R_w) \times (I_t))$

R_t = Total Circuit Resistance
D = Total Circuit Length (Feet)
R_w = Wire Resistance (Ω) per 1000' Pair (Ohms)
V_D = Circuit Voltage Drop (Max allowed is 4.0Vdc)
I_t = 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.**
4. **Calculations assume 75 candela rating for all Speaker/Strobes & 15 candela for Strobe Units.**

HORN/STROBE CIRCUIT MAX WIRE LENGTH CALCULATION

	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM (20v)		495S	757-8A	Total Circuit Current	Ω per 1000' Pair		
Current (mA)	88	109	193	248	71	188	350	260		12AWG (3.5)	14AWG (5.2)	
Ckt/Cd	15cd	30cd	75cd	110cd	15	75cd		110cd	Amp	Max Length (Ft)	Max Length (Ft)	Volt Drop
iO64 Ckt1	5	2	5		5				1.9780	577.78	388.89	4.0
iO64 Ckt2							1		0.3500	3265.31	2197.80	4.0
n/a									0.0000	#DIV/0!	#DIV/0!	4.0
n/a									0.0000	#DIV/0!	#DIV/0!	4.0