Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 06/01/16

NAC Circuit Voltage Drop Calculation

Project Name	**Academy for Active Learners**		
Date	**4/4/16**		
Circuit Number	**NAC #1**		
Area Covered	**Main Entry & Adjascent Rooms**		
NAC Source Alarm Voltage	20.4	Wire Gauge	Resistance Per MFt Cable
Minimum Device Voltage	16		
Distance to first appliance	30	14	5.84
Total Circuit Current	0.402		

Wire Gauge for balance of circuit	14	5.84

Circuit is within limits

	Device Current	Distance from previous device	Voltage at Device	Drop from source	Percent Drop
Appliance 1	0.078		20.33	0.07	0.3%
Appliance 2	0.064	25	20.28	0.12	0.6%
Appliance 3	0.098	30	20.24	0.16	0.8%
Appliance 4	0.098	30	20.21	0.19	0.9%
Appliance 5	0.064	30	20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
END			20.20	0.20	1.0%
Totals	0.402	145			

Appliance circuit voltage drop calculations start at "end of battery life" as NAC Source Alarm Voltage and use 20% below nameplate rating for Minimum Appliance Voltage.

Note. Wire resistance is based on the 1996 NEC Table 8 Uncoated DC resistance. Solid conductors except gauges 10 and 12 which are for stranded.

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NAC Circuit Voltage Drop Calculation

Project Name	**Academy for Active Learners**			
Date	**4/4/16**			
Circuit Number	**NAC #2**			
Area Covered	**Common Rooms**			
NAC Source Alarm Voltage	20.4		Wire Gauge	Resistance Per MFt Cable
Minimum Device Voltage	16			
Distance to first appliance	60		14	5.84
Total Circuit Current	0.640			

Wire Gauge for balance of circuit	14	5.84

Circuit is within limits

	Device Current	Distance from previous device	Voltage at Device	Drop from source	Percent Drop
Appliance 1	0.078		20.18	0.22	1.1%
Appliance 2	0.064	35	20.06	0.34	1.7%
Appliance 3	0.064	25	19.99	0.41	2.0%
Appliance 4	0.064	45	19.87	0.53	2.6%
Appliance 5	0.175	60	19.74	0.66	3.2%
Appliance 6	0.195	50	19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
END			19.69	0.71	3.5%
Totals	0.640	275			

Appliance circuit voltage drop calculations start at "end of battery life" as NAC Source Alarm Voltage and use 20% below nameplate rating for Minimum Appliance Voltage.

Note. Wire resistance is based on the 1996 NEC Table 8 Uncoated DC resistance. Solid conductors except gauges 10 and 12 which are for stranded.

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NAC Circuit Voltage Drop Calculation

Project Name	**Academy for Active Learners**		
Date	**4/4/16**		
Circuit Number	**NAC #3**		
Area Covered	**Gym**		
NAC Source Alarm Voltage	20.4	Wire Gauge	Resistance Per MFt Cable
Minimum Device Voltage	16		
Distance to first appliance	90	14	5.84
Total Circuit Current	0.704		

Wire Gauge for balance of circuit	14	5.84

Circuit is within limits

	Device Current	Distance from previous device	Voltage at Device	Drop from source	Percent Drop
Appliance 1	0.064		20.03	0.37	1.8%
Appliance 2	0.064	25	19.94	0.46	2.3%
Appliance 3	0.078	40	19.80	0.60	2.9%
Appliance 4	0.175	40	19.69	0.71	3.5%
Appliance 5	0.259	60	19.57	0.83	4.1%
Appliance 6	0.064	40	19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
END			19.56	0.84	4.1%
Totals	0.704	295			

Appliance circuit voltage drop calculations start at "end of battery life" as NAC Source Alarm Voltage and use 20% below nameplate rating for Minimum Appliance Voltage.

Note. Wire resistance is based on the 1996 NEC Table 8 Uncoated DC resistance. Solid conductors except gauges 10 and 12 which are for stranded.