TYPICAL VOLTAGE DROP CALCULATION FOR 2 - WIRE SYSTEM

$$\text{VOLTAGE DROP (COPPER CONDUCTOR)} = \frac{D \times A \times N \times 22}{\text{CIRCULAR MILS}}$$

D = Length of section, in feet.

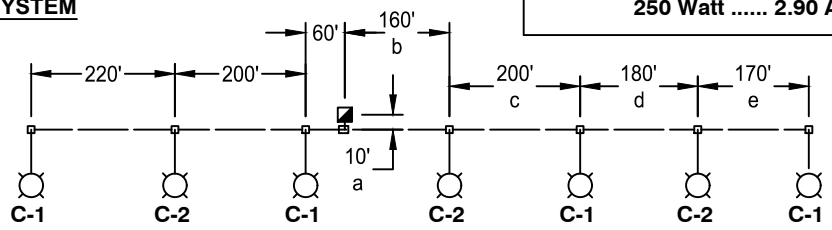
A = Line operating amperes drawn by one light.

N = Number of lights in the circuit beyond the section.

WIRE SIZE (AWG)	AREA (Circular Mils)
14	4,110
12	6,530
10	10,380
8	16,510
6	26,250
4	41,740

LINE OPERATING AMPERES FOR HIGH PRESSURE SODIUM LUMINAIRES (AT 115 VOLTS)
100 Watt ..... 1.10 Amps ENERGY EFFICIENT
100 Watt ..... 1.25 Amps
150 Watt ..... 1.80 Amps
200 Watt ..... 2.35 Amps
250 Watt ..... 2.90 Amps

TYPICAL MULTIPLE STREET LIGHTING SYSTEM



EXAMPLE CALCULATION:

FIND TOTAL VOLTAGE DROP IN CIRCUIT #1:
(115 volt system)

NOTE:

Dimension "a" is the distance between the service can and the adjacent load pull box. Use "a"=10' for standard installations where the load pull box is immediately adjacent to the service can.

Voltage drop calculations

Section a $= \frac{10\ (2.9 \times 4)\ (22)}{10{,}380} = 0.25$

Section b + c $= \frac{360\ (2.9 \times 2)\ (22)}{10{,}380} = 4.43$

Section d + e $= \frac{350\ (2.9 \times 1)\ (22)}{10{,}380} = 2.15$

TOTAL VOLTAGE DROP = 6.83

LEGEND

250W High Pressure Sodium Luminaire

Circuit #1

Service Can

Conduit with #10 AWG Conductors

NOTES:

1. **Design must be based on a two (2) wire system, even though three (3) wires (with a single common wire) are actually used.**
2. **Maximum voltage drop allowed in 115 volt system = 8.05 volts.**

DATE: 09/22/2017	NOT TO SCALE

REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

2 - WIRE STREET LIGHT SYSTEM WIRE SIZE AND VOLTAGE DROP CALCULATION

APPROVED BY:

CITY ENGINEER — DATE: 10/24/2018

DRAWING NUMBER

SL - 13