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.

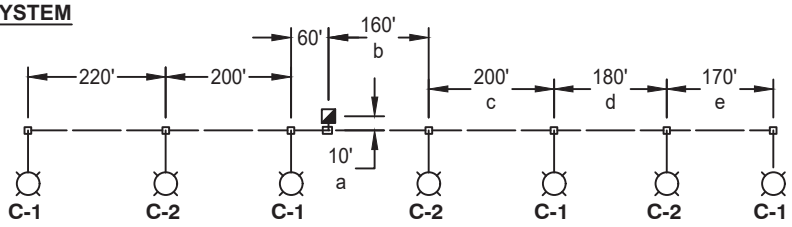
A = Line operating amperes drawn by one light.

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

Driver Maximum Input Amps for Light Emitting Diode (LED) Luminaires (At 115 Volts)
All Fixtures: 1.25 Amps

TYPICAL MULTIPLE STREET LIGHTING SYSTEM



EXAMPLE CIRCUIT 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 $= \frac{10\ (1.25 \times 4)\ (22)}{10{,}380} = 0.11$

Section b + c $= \frac{360\ (1.25 \times 2)\ (22)}{10{,}380} = 1.91$

Section d + e $= \frac{350\ (1.25 \times 1)\ (22)}{10{,}380} = 0.93$

TOTAL VOLTAGE DROP = 2.95

LEGEND

- **115W Light Emitting Diode Luminaire**
- C-1 — **Circuit Number**
- **Service Point**
- **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.

THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

REGISTERED PROFESSIONAL ENGINEER
MARK LOUIS COLLIER
No. 54031
CIVIL
STATE OF CALIFORNIA

APPROVED: Aug. X, 2025

STANDARD DETAIL #

611

TITLE:

VOLTAGE DROP CALCULATION FOR A TWO-WIRE SYSTEM

CITY OF WEST SACRAMENTO