

CONDUIT SIZING

CONDUCTOR	EQUIVALENT NUMBER OF #14 AWG CONDUCTORS FOR USE IN CONDUIT SIZING
#12 CONDUCTOR	1.2
#10 CONDUCTOR	1.5
#8 CONDUCTOR	2.3
#6 CONDUCTOR	3
#4 CONDUCTOR	4
#2 CONDUCTOR	5.3
#0 CONDUCTOR	11.5

CONDUIT SIZE	1.5"	2"	2.5"	3"	3.5"	4"
MAXIMUM NUMBER OF #14 AWG CONDUCTORS	19	31	44	69	91	113

CIRCUIT BREAKER SIZING

CONDUCTOR SIZE (AWG)	MAXIMUM CIRCUIT BREAKER AMPERAGE COPPER	MAXIMUM CIRCUIT BREAKER AMPERAGE ALUMINUM
#2	95	90
#3	85	75
#4	70	65
#6	55	50
#8	40	40
#10	30	30
#12	20	20
#14	15	---

SERVICE CONDUCTOR MAXIMUM LENGTHS

WIRE SIZE	LENGTH
#2	360'

CONDUCTOR SIZING

WIRE SIZE (AWG)	AREA (CIRCULAR MILS)
#2	66,369

NOTE:
THE BREAKER SIZE SHALL BE DETERMINED BY THE LOAD REQUIREMENTS. MINIMUM BREAKER SIZE IS 15 AMPS.

TYPICAL VOLTAGE DROP CALCULATION FOR 2 - WIRE SYSTEM

$$\text{VOLTAGE DROP} = \frac{2 \times N \times K \times I \times D}{\text{CIRCULAR MILS}}$$

D = LENGTH OF SECTION (FEET.)

I = LINE OPERATING AMPERES DRAWN BY ONE LIGHT(AMPS.)

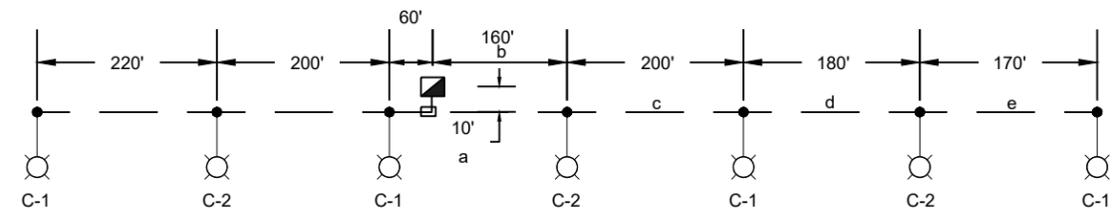
K = DIRECT CURRENT CONSTANT (OHMS). ALUMINUM CONDUCTOR = 21.2 OHMS. COPPER CONDUCTOR = 12.9 OHMS.

N = NUMBER OF LIGHTS IN THE CIRCUIT BEYOND THE SECTION.

DRIVER MAXIMUM INPUT AMPS FOR LIGHT EMITTING DIODE LED LUMINAIRES

ALL FIXTURES 1.25 AMPS (120 V)
ALL FIXTURES 0.42 AMPS (240 V)

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 POINT OF SERVICE AND THE ADJACENT LOAD PULL BOX. USE "a" = 10' FOR STANDARD INSTALLATIONS WHERE THE LOAD PULL BOX IS IMMEDIATELY ADJACENT TO THE POINT OF SERVICE.

VOLTAGE DROP CALCULATIONS

$$\text{SECTION a} = \frac{2 \times 4 \times 21.9 \times 1.25 \times 10}{10,380} = 0.21$$

$$\text{SECTION b + c} = \frac{2 \times 2 \times 21.9 \times 1.25 \times 350}{16,380} = 4.11$$

$$\text{SECTION c + e} = \frac{2 \times 1 \times 21.9 \times 1.25 \times 350}{10,380} = 1.85$$

TOTAL VOLTAGE DROP = 6.17

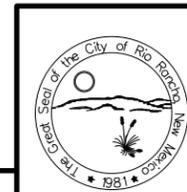
LEGEND

- 115W LIGHT EMITTING DIODE LUMINAIRE
- CIRCUIT #1
- POINT OF SERVICE
- CONDUIT WITH #10 AWG CONDUCTORS

NOTES:
1. THE CONDUCTOR FROM THE SERVICE ENCLOSURE TO THE LUMINAIRES SHALL NOT EXCEED A VOLTAGE DROP OF 5%.

NOT TO SCALE

DATE MODIFIED:



City of Rio Rancho
Department of Public Works

VOLTAGE DROP CALCULATION
EXAMPLE

DWG. NO. TSSL-07

April 21, 2025