VOLTAGE DROP CALCULATION FOR A TWO WIRE SYSTEM

TABLE A: K FACTOR PER 1000 FEET						
STREET LIGHT CIRCUIT VOLTAGE AND DESIGNATION		CU-CONDUCTOR SIZE AWG				
		#10	#8	#6	#4	#2
480V	2 WIRE, SINGLE PHASE 95% PF	4.45	2.87	1.82	1.16	0.75
240V	2 WIRE, SINGLE PHASE 95% PF	8.9	5.75	3.64	2.32	1.49
120V	2 WIRE, SINGLE PHASE 95% PF	17.8	11.5	7.28	4.64	2.98

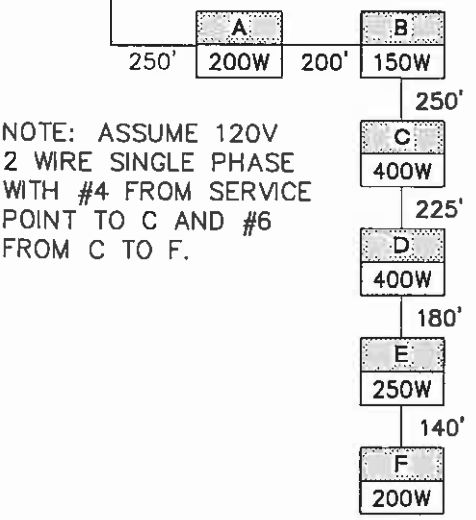
TABLE B: KVA DEMAND FOR H.P.S. LAMPS	
NOMINAL LAMP WATTAGE	KVA DEMAND (INCLUDING BALLASTS) FOR REGULATED BALLAST LUMINARIES
70	0.108
100	0.168
150	0.204
200	0.252
250	0.318
400	0.501

$$\text{VOLTAGE DROP (IN VOLTS)} = \frac{K \times KVA \times d}{1000}$$

WHERE: d = CIRCUIT DISTANCE IN FEET
K = K VALUE FROM TABLE A
KVA = KVA VALUE FROM TABLE B

NOTE: MAXIMUM VOLTAGE DROP IS 5% FROM SERVICE POINT TO FURTHEST LIGHT. FOR 3 WIRE (TRIPLE PHASE) SYSTEM, DIVIDE BY 2000 INSTEAD OF 1000.

FIGURE A



NOTE: ASSUME 120V 2 WIRE SINGLE PHASE WITH #4 FROM SERVICE POINT TO C AND #6 FROM C TO F.

EXAMPLE FOR FIGURE A						
		TOTAL KVA DEMAND	x K x	d/1000	=	VOLTAGE DROP
FROM SERVICE POINT	TO A	2.028	4.64	0.250	=	2.35V
A	TO B	1.776	4.64	0.200	=	1.65V
B	TO C	1.572	4.64	0.250	=	1.82V
C	TO D	1.071	7.28	0.225	=	1.75V
D	TO E	0.570	7.28	0.180	=	.75V
E	TO F	0.252	7.28	0.140	=	.26V
TOTAL VOLTAGE DROP FROM SERVICE POINT TO F					=	8.58V
MAXIMUM PERMISSIBLE =.05 (120)					=	6V

THE CITY OF WEST SACRAMENTO – STANDARD DETAIL

APPROVED BY: _____ CITY ENGINEER | C-38733 P.E. NO. | 3/31/05 DATE

REVISION:	
REVISION:	
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REVISION:	

TITLE:

VOLTAGE DROP CALCULATION FOR A TWO-WIRE SYSTEM

STANDARD DETAIL #: 611

THE CITY OF WEST SACRAMENTO EST. 1987

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