

VOLTAGE DROP CALCULATION FOR CABINET A1					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF HOME AND ROOSEVELT		
CABINET	A1	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	A	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
5	1.42A	267FT	2	0.321/1000	1.122V
4	1.42A	263FT	2	0.321/1000	0.959V
3	1.42A	255FT	2	0.321/1000	0.697V
2	1.42A	233FT	2	0.321/1000	0.425V
1	1.42A	245FT	2	0.321/1000	0.223V
TOTAL					3.522V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.734%					

VOLTAGE DROP CALCULATION FOR CABINET A2					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF EAST AND ROOSEVELT		
CABINET	A2	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	A	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
6	1.42A	66FT	2	0.321/1000	0.361V
5	1.42A	261FT	2	0.321/1000	1.190V
4	1.42A	270FT	2	0.321/1000	0.985V
3	1.42A	249FT	2	0.321/1000	0.681V
2	1.42A	279FT	2	0.321/1000	0.509V
1	1.42A	208FT	2	0.321/1000	0.190V
TOTAL					3.915V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.816%					

VOLTAGE DROP CALCULATION FOR CABINET B1					
PROJECT	ROOSEVELT ROAD	LOCATION	SW OF AUSTIN AND ROOSEVELT		
CABINET	B1	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	C	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
4	1.42A	368FT	2	0.321/1000	1.342V
3	1.42A	279FT	2	0.321/1000	0.763V
2	1.42A	254FT	2	0.321/1000	0.463V
1	1.42A	244FT	2	0.321/1000	0.222V
TOTAL					2.791V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.581%					

VOLTAGE DROP CALCULATION FOR CABINET A1					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF HOME AND ROOSEVELT		
CABINET	A1	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	B	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
5	1.42A	129FT	2	0.321/1000	0.589V
4	1.42A	288FT	2	0.321/1000	1.050V
3	1.42A	242FT	2	0.321/1000	0.682V
2	1.42A	237FT	2	0.321/1000	0.432V
1	1.42A	241FT	2	0.321/1000	0.219V
TOTAL					2.952V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.615%					

VOLTAGE DROP CALCULATION FOR CABINET A2					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF EAST AND ROOSEVELT		
CABINET	A2	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	B	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
5	1.42A	197FT	2	0.321/1000	0.898V
4	1.42A	260FT	2	0.321/1000	0.948V
3	1.42A	278FT	2	0.321/1000	0.760V
2	1.42A	260FT	2	0.321/1000	0.474V
1	1.42A	258FT	2	0.321/1000	0.235V
TOTAL					3.316V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.691%					

VOLTAGE DROP CALCULATION FOR CABINET B1					
PROJECT	ROOSEVELT ROAD	LOCATION	SW OF AUSTIN AND ROOSEVELT		
CABINET	B1	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	D	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
5	1.42A	233FT	2	0.321/1000	1.062V
4	1.42A	277FT	2	0.321/1000	1.010V
3	1.42A	248FT	2	0.321/1000	0.678V
2	1.42A	274FT	2	0.321/1000	0.500V
1	1.42A	263FT	2	0.321/1000	0.240V
TOTAL					2.490V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.727%					

VOLTAGE DROP CALCULATION FOR CABINET A1					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF HOME AND ROOSEVELT		
CABINET	A1	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	C	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
6	1.42A	26FT	2	0.321/1000	0.142V
5	1.42A	226FT	2	0.321/1000	1.030V
4	1.42A	243FT	2	0.321/1000	0.886V
3	1.42A	239FT	2	0.321/1000	0.654V
2	1.42A	248FT	2	0.321/1000	0.452V
1	1.42A	276FT	2	0.321/1000	0.252V
TOTAL					3.416V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.712%					

VOLTAGE DROP CALCULATION FOR CABINET A2					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF EAST AND ROOSEVELT		
CABINET	A2	CABLE SIZE	3-1/C NO.2 & 1-1/C NO.4		
CIRCUIT	C	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
10	1.42A	232FT	2	0.201/1000	1.324V
9	1.42A	243FT	2	0.201/1000	1.248V
8	1.42A	273FT	2	0.201/1000	1.247V
7	1.42A	272FT	2	0.201/1000	1.087V
6	1.42A	245FT	2	0.201/1000	0.839V
5	1.42A	154FT	2	0.201/1000	0.440V
4	1.42A	265FT	2	0.201/1000	0.605V
3	1.42A	266FT	2	0.201/1000	0.456V
2	1.42A	272FT	2	0.201/1000	0.311V
1	1.42A	258FT	2	0.201/1000	0.147V
TOTAL					7.703V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =1.605%					

EXISTING TRAFFIC CABINET AT AUSTIN & ROOSEVELT

VOLTAGE DROP CALCULATION FOR CABINET BA					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF AUSTIN AND ROOSEVELT		
CABINET	BA	CABLE SIZE	2-1/C NO.6 & 1-1/C NO.6		
CIRCUIT	A	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	120V	LUMINAIRE VOLTAGE	120V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
1	3.33A	130FT	2	0.510/1000	0.44V
TOTAL					0.44V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.36%					

VOLTAGE DROP CALCULATION FOR CABINET A1					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF HOME AND ROOSEVELT		
CABINET	A1	CABLE SIZE	3-1/C NO.4 & 1-1/C NO.6		
CIRCUIT	D	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
6	1.42A	139FT	2	0.321/1000	0.760V
5	1.42A	243FT	2	0.321/1000	1.108V
4	1.42A	227FT	2	0.321/1000	0.828V
3	1.42A	239FT	2	0.321/1000	0.654V
2	1.42A	248FT	2	0.321/1000	0.452V
1	1.42A	276FT	2	0.321/1000	0.252V
TOTAL					4.053V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =0.844%					

VOLTAGE DROP CALCULATION FOR CABINET A2					
PROJECT	ROOSEVELT ROAD	LOCATION	SE OF EAST AND ROOSEVELT		
CABINET	A2	CABLE SIZE	3-1/C NO.2 & 1-1/C NO.4		
CIRCUIT	D	CONDUCTOR	COPPER		
SYSTEM VOLTAGE	480V	LUMINAIRE VOLTAGE	240V		
NO. OF LUMINAIRES	CURRENT/LUMINAIRE	DISTANCE	2X	RESISTIVITY	VOLTAGE DROP
11	1.42A	74FT	2	0.201/1000	0.464V
10	1.42A	259FT	2	0.201/1000	1.478V
9	1.42A	268FT	2	0.201/1000	1.377V
8	1.42A	280FT	2	0.201/1000	1.279V
7	1.42A	240FT	2	0.201/1000	0.959V
6	1.42A	220FT	2	0.201/1000	0.754V
5	1.42A	200FT	2	0.201/1000	0.571V
4	1.42A	269FT	2	0.201/1000	0.614V
3	1.42A	264FT	2	0.201/1000	0.452V
2	1.42A	272FT	2	0.201/1000	0.311V
1	1.42A	265FT	2	0.201/1000	0.151V
TOTAL					8.410V
TOTAL VOLTAGE DROP/ SYSTEM VOLTAGE =1.752%					

Highway Lighting Voltage Drop Calculations

$$V_d = 2(D) (I) (R)$$

V_d = Voltage Drop
 D = Length of cable
 2 = Multiplier; since current leaves and returns
 I = Total current in segment
 R = DC Resistance of the cable

$$\%V_d = \frac{V_d}{480} (100)$$

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STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

VOLTAGE DROP CALCULATION FOR CABINETS

FILE NAME = DIRTE38-shr-light2.dgn	USER NAME = IDOT	DESIGNED - EE	REVISED -	SCALE: 1" = 20' SHEET NO. 2 OF 29 SHEETS STA. TO STA.	F.A.P. RTE. 347	SECTION 09-00248-00-RS	COUNTY COOK	TOTAL SHEETS 274	SHEET NO. 222	CONTRACT NO. 63432	ILLINOIS FED. AID PROJECT
	PLOT SCALE = 8,2000' / IN.	CHECKED - JB	REVISED -								
	PLOT DATE = 3/11/2010	DATE -	REVISED -								