



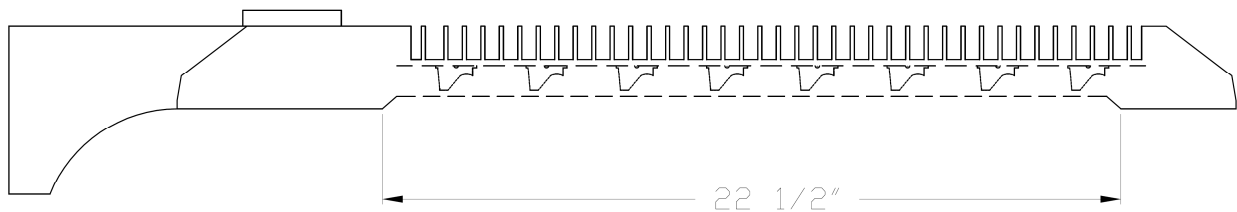
Lighting Sciences

www.lightingsciences.com

Lighting Sciences Inc.
7826 E. Evans Road
Scottsdale, Arizona 85260 USA
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INDEPENDENT TEST LABORATORY REPORT No. 28223

SOLAR OUTDOOR LIGHTING - LED ROADWAY LUMINAIRE
WITH ALUMINUM INTERIOR AND CLEAR GLASS FLAT LENS
FORTY EIGHT LEDS WITH PLASTIC DIRECTIONAL LENSES. LUMINAIRE OUTPUT: 3466 Lms.
LUMINAIRE OPERATING AT 12.5 VDC AND 49.9 WATTS - HIGHER LUMEN LEDS



PREPARED FOR:

SOLAR OUTDOOR LIGHTING INC
PALM CITY , FL

DATE: DEC 8, 2010

CERTIFIED BY:

ALL TESTING WAS CONDUCTED IN ACCORDANCE WITH LM-79-08.
LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE.
BALLAST FACTORS HAVE NOT BEEN APPLIED

TESTED IN 30 PLANES LEFT SIDE, 30 PLANES RIGHT SIDE, LEFT AND RIGHT AVERAGED

VERTICAL TEST INCREMENTS ARE 2.5 DEGREES.

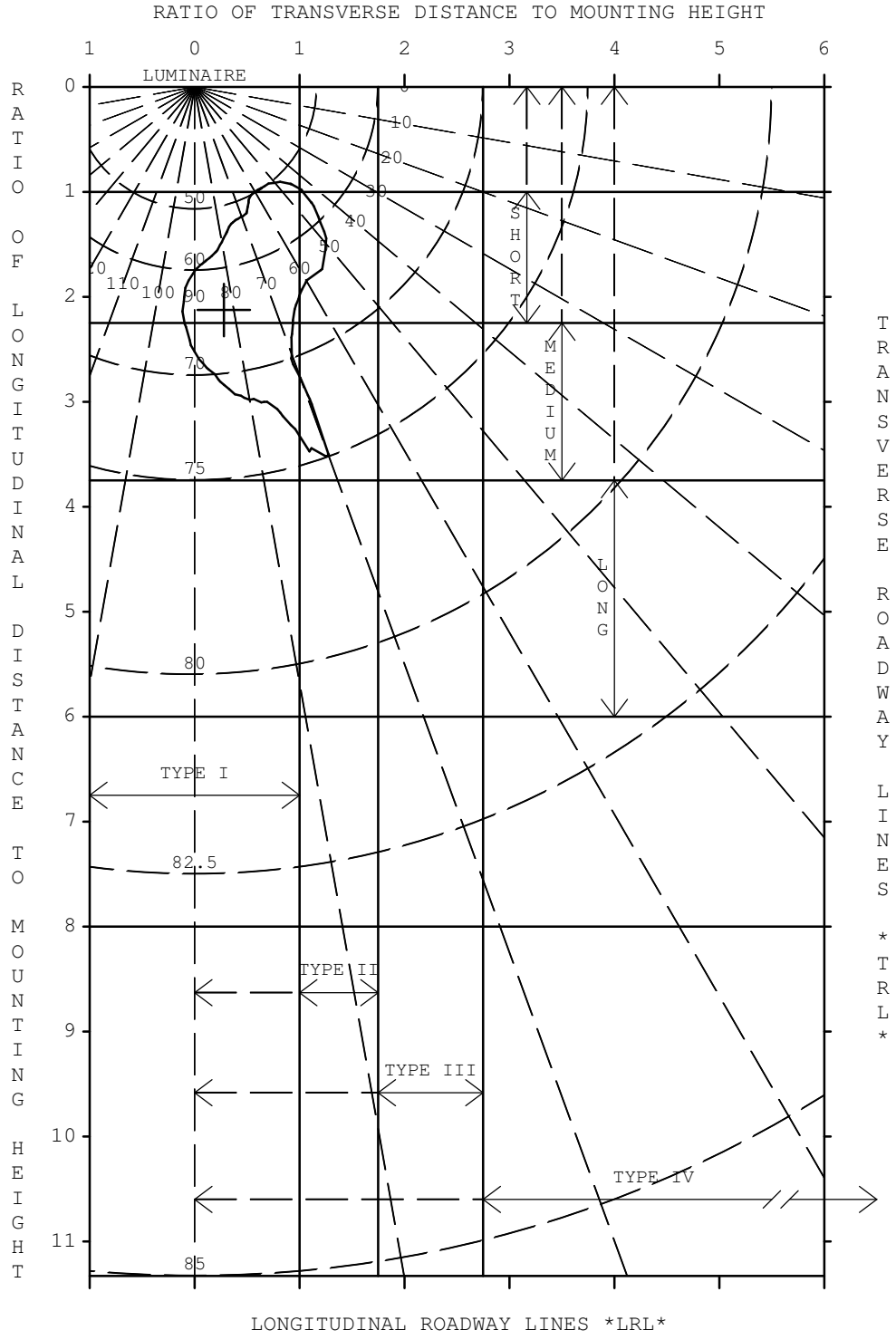
TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST
LUMINOUS OPENING OF LUMINAIRE.

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NOTE:
CONTOUR LINE
IS FOR 50%
OF THE MAXIMUM
INTENSITY

IES ROADWAY CLASSIFICATION: TYPE II, SHORT

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*** THIS IS AN ABSOLUTE TEST REPORT ***

UTILIZATION TABLE

CO-EFFICIENT OF UTILIZATION

RATIO	HOUSE SIDE	STREET SIDE	TOTAL
0.5	0.108	0.245	0.352
1.0	0.167	0.530	0.697
1.5	0.204	0.677	0.882
2.0	0.224	0.720	0.944
2.5	0.235	0.730	0.965
3.0	0.241	0.734	0.975
3.5	0.246	0.737	0.983
4.0	0.249	0.738	0.986
5.0	0.253	0.739	0.992
TOTAL:	0.258	0.742	1.000
PERCENT:	25.8	74.2	100.0

EFFICACY (LUMENS PER WATT) 69.5

THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS
BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN.
LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD
THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

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ZONAL LUMEN SUMMARY PER IES PUBLICATION TM-15-07

*** THIS IS AN ABSOLUTE TEST REPORT ***

FORWARD LIGHT:

LUMENS	2571.6
% LUMENS	74.2 %
FORWARD LOW ZONE (0 TO 30 DEGREES)	6.6 %
FORWARD MID ZONE (30 TO 60 DEGREES)	41.9 %
FORWARD HIGH ZONE (60 TO 80 DEGREES)	25.0 %
FORWARD VERY HIGH ZONE (80 TO 90 DEGREES)	0.6 %

BACK LIGHT:

LUMENS	894.6
% LUMENS	25.8 %
BACK LIGHT LOW ZONE (0 TO 30 DEGREES)	4.1 %
BACK LIGHT MID ZONE (30 TO 60 DEGREES)	12.3 %
BACK LIGHT HIGH ZONE (60 TO 80 DEGREES)	8.7 %
BACK LIGHT VERY HIGH ZONE (80 TO 90 DEGREES)	0.7 %

UPLIGHT:

LUMENS	0.0
% LUMENS	0.0 %
UPLIGHT LOW ZONE (90 TO 100 DEGREES)	0.0 %
UPLIGHT HIGH ZONE (100 TO 180 DEGREES)	0.0 %

TRAPPED LIGHT: NOT APPLICABLE TO AN ABSOLUTE TEST

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IES "BUG" RATING (BACK LIGHT, UPLIGHT, GLARE)
PER ADDENDUM TO IES TM-15-07

	LUMENS	SECONDARY SOLID ANGLE RATING
BACK LIGHT		
BH (60-80 DEGREES)	302.8	B1
BM (30-60 DEGREES)	425.9	B1
BL (0-30 DEGREES)	143.2	B1
UPLIGHT		
UH (100-180 DEGREES)	0.0	U0
UL (90-100 DEGREES)	0.0	U0
FVH (80-90 DEGREES)	22.3	U1
BVH (80-90 DEGREES)	22.7	U1
GLARE LIGHT		
FVH (80-90 DEGREES)	22.3	G1
BVH (80-90 DEGREES)	22.7	G1
FH (60-80 DEGREES)	868.0	G1
BH (60-80 DEGREES)	302.8	G1

IES BUG RATING: B1 U1 G1

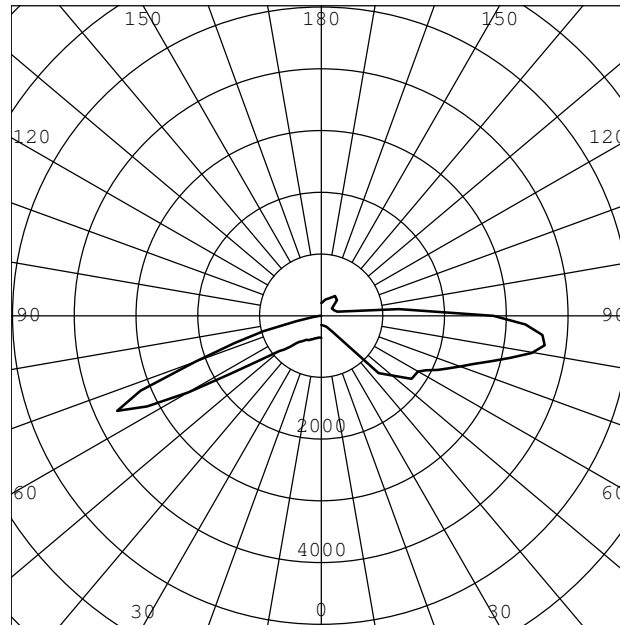
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INTENSITY (CANDLEPOWER)
 IN MAX. PLANE

ANGLE	CANDLEPOWER
0.0	361
5.0	358
10.0	368
15.0	380
20.0	407
25.0	433
30.0	455
35.0	488
40.0	559
45.0	708
50.0	895
52.5	1079
55.0	1334
57.5	1762
60.0	2491
62.5	3181
65.0	3654
67.5	3173
70.0	2161
72.5	1477
75.0	974
77.5	421
80.0	166
82.5	91
85.0	41
87.5	3
90.0	0



INTENSITY (CANDLEPOWER)
 IN MAX. CONE

ANGLE	CANDLEPOWER
0.0	153
5.0	158
15.0	175
25.0	200
35.0	321
45.0	1317
55.0	1791
60.0	1809
62.5	1917
65.0	2083
67.5	2237
70.0	2402
72.5	2604
75.0	2844
77.5	3148
80.0	3469
82.5	3654
85.0	3598
87.5	3313
90.0	2788
95.0	1264
105.0	273
115.0	231
125.0	216
135.0	364
145.0	395
155.0	320
165.0	277
175.0	224
180.0	211

MAXIMUM INTENSITY (CANDLEPOWER): 3654 CD
 PLANE OF MAXIMUM: 82.5
 VERTICAL ANGLE OF MAXIMUM: 65.0

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INTENSITY (CANDLEPOWER) SUMMARY

VERT. ANGLE	HORIZONTAL ANGLES - STREET SIDE										
	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	82.5 ****	85.0
0.0	361	361	361	361	361	361	361	361	361	361	361
5.0	367	371	372	371	368	366	365	363	359	358	358
10.0	416	422	418	411	403	394	388	378	374	368	366
15.0	514	524	511	490	469	443	421	407	393	380	376
20.0	645	653	630	610	577	524	470	435	435	407	395
25.0	769	776	756	746	715	659	579	488	470	433	411
30.0	905	907	893	906	894	849	741	578	486	455	424
35.0	1087	1091	1097	1122	1134	1073	930	698	531	488	443
40.0	1314	1309	1355	1424	1444	1330	1115	854	624	559	507
45.0	1332	1293	1438	1646	1719	1608	1350	1191	919	708	635
50.0	1057	1033	1153	1390	1662	1705	1932	1793	1315	895	772
55.0	805	781	875	1082	1239	1894	2317	2035	2203	1334	1164
60.0	400	382	413	565	856	1750	2221	2265	2983	2491	2272
65.0**	153	158	175	200	321	1317	1791	2083	2844	3654	3598
70.0	94	93	104	128	150	476	825	1206	2046	2161	1952
75.0	46	48	65	87	88	105	185	1200	1662	974	574
80.0	18	21	28	36	31	30	56	546	655	166	120
85.0	2	2	3	3	3	2	5	25	68	41	28
90.0	0	0	0	0	0	0	0	0	0	0	0

VERT. ANGLE	HORIZONTAL ANGLES - HOUSE SIDE										
	90.0	95.0	105.0	115.0	125.0	135.0	145.0	155.0	165.0	175.0	180.0
0.0	361	361	361	361	361	361	361	361	361	361	361
5.0	359	359	358	359	362	366	369	372	373	373	373
10.0	368	368	368	374	377	372	363	358	354	353	350
15.0	376	374	376	385	376	362	343	322	305	299	291
20.0	388	386	389	394	372	322	283	272	269	267	267
25.0	394	396	403	392	316	330	306	311	294	290	290
30.0	396	399	402	338	304	350	310	351	377	386	393
35.0	394	382	387	282	280	284	352	423	422	419	418
40.0	441	414	356	275	268	287	384	416	413	415	416
45.0	554	473	339	254	253	335	388	401	406	403	398
50.0	594	471	330	245	259	392	423	409	395	370	360
55.0	897	613	360	245	273	436	448	418	369	344	331
60.0	1732	919	336	246	260	449	460	385	317	272	260
65.0**	2788	1264	273	231	216	364	395	320	277	224	211
70.0	1248	579	193	184	176	294	317	301	242	190	181
75.0	282	340	134	119	125	205	276	267	183	182	182
80.0	65	118	53	68	67	106	138	185	196	145	114
85.0	15	15	10	14	16	26	28	54	66	67	49
90.0	0	0	0	0	0	0	0	0	0	0	0

** DENOTES VERTICAL ANGLE OF MAXIMUM CONE

**** DENOTES LATERAL ANGLE OF MAXIMUM PLANE

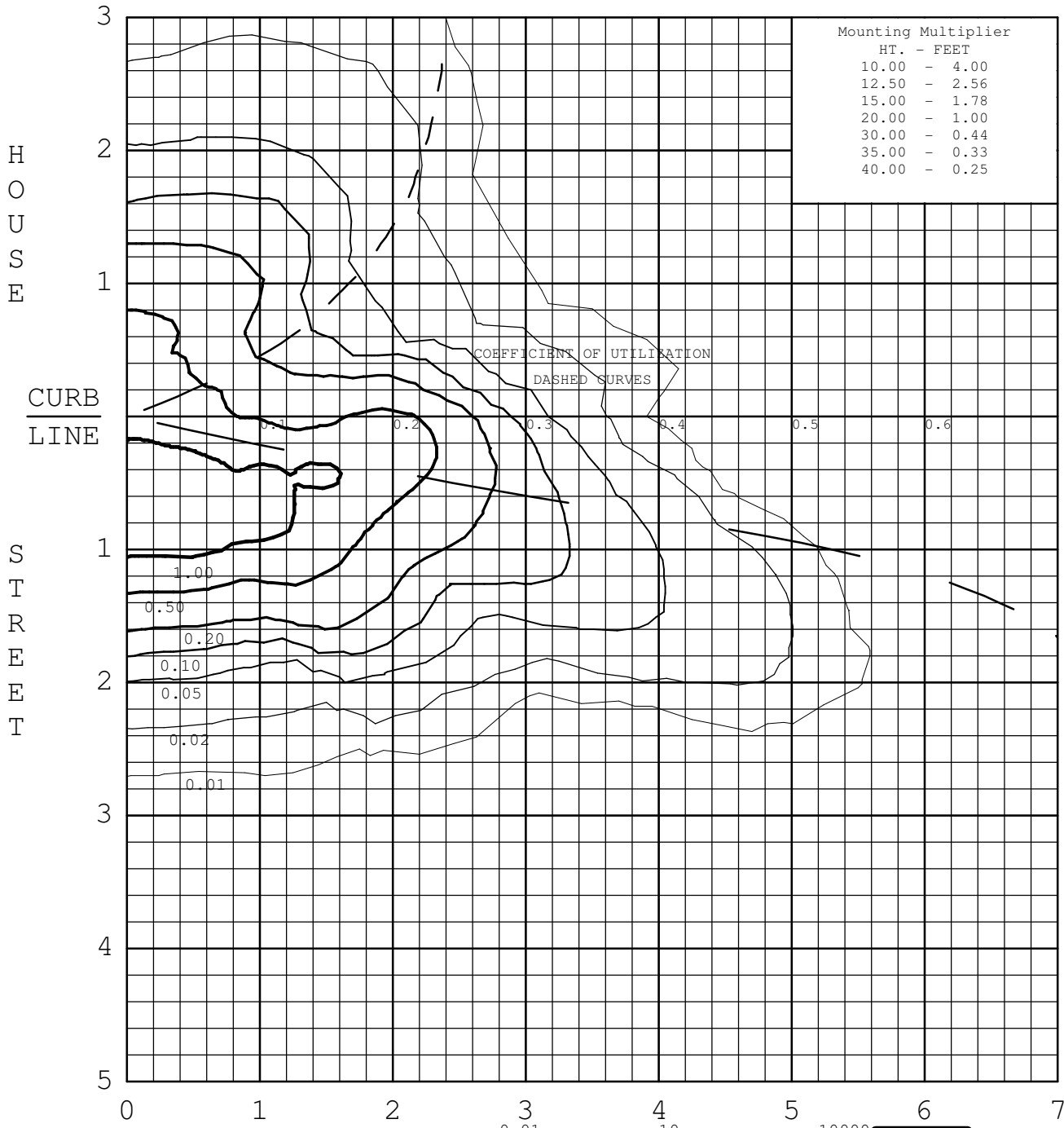
INTENSITY WAS MEASURED IN 2.5 DEGREE STEPS - TABULATIONS ARE AVAILABLE

ISOFOOTCANDLE

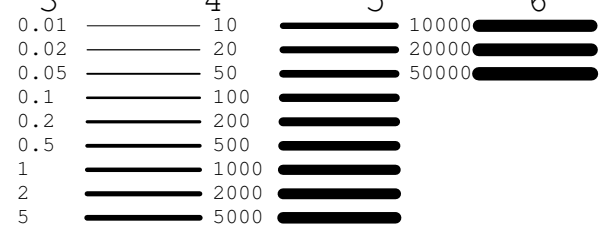
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MOUNTING HEIGHT FOR ISOFC 20.0 FEET



$$\text{RATIO} = \frac{\text{DISTANCE ALONG}}{\text{MOUNTING HEIGHT}}$$



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** ILLUMINANCE(FOOTCANDLE) TABLE FOR SINGLE LUMINAIRE AT 20.0 FT. **														
LATERAL RATIOS														
-3.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.014	.016	.017	.016	.013	.009	.005	.003	.002	.001	.001	.001	.000	.000
-2.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.025	.028	.030	.026	.019	.011	.006	.003	.002	.001	.001	.001	.000	.000
-2.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.054	.058	.055	.042	.027	.013	.006	.004	.003	.002	.001	.001	.000	.000
-1.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	0.12	0.14	0.12	.072	.027	.014	.008	.005	.003	.002	.001	.001	.001	.000
-1.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	0.35	0.30	0.20	.072	.038	.020	.011	.006	.004	.003	.002	.001	.001	.000
-0.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	0.57	0.38	0.18	0.12	.078	.051	.026	.015	.009	.005	.003	.002	.001	.001
HOUSE		CURB LINE												
STREET	0.90	0.71	0.49	0.44	0.58	0.24	.073	.024	.008	.003	.002	.001	.001	.000
0.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	1.4	1.4	1.2	1.0	0.61	0.31	0.13	.060	.024	.008	.004	.002	.001	.001
1.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	1.1	1.1	0.90	0.62	0.30	0.17	0.13	.081	.045	.024	.011	.004	.002	.001
1.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	0.29	0.26	0.20	0.26	0.14	.059	.054	.060	.046	.029	.016	.009	.005	.002
2.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.047	.043	.034	.038	.039	.022	.013	.013	.018	.018	.014	.009	.006	.003
2.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.015	.014	.013	.011	.010	.007	.005	.003	.004	.005	.006	.005	.004	.003
3.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.006	.006	.006	.006	.004	.003	.002	.002	.001	.001	.002	.002	.002	.001
3.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.003	.003	.003	.003	.003	.002	.001	.001	.001	.001	.001	.001	.001	.001
4.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.001	.002	.002	.002	.002	.001	.001	.001	.000	.000	.000	.000	.000	.000
4.50	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.001	.001	.001	.001	.001	.001	.001	.000	.000	.000	.000	.000	.000	.000
5.00	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	.000	.001	.001	.001	.001	.001	.000	.000	.000	.000	.000	.000	.000	.000
	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
														7.0

CORRECTION FACTORS FOR OTHER MOUNTING HEIGHTS: SEE ISOFOOTCANDLE PAGE