



8165 E Kaiser Blvd. Anaheim, CA 92808  
www.lightlaboratory.com

Report No: L041706605



**Report No:** L041706605

**Issue Date:** 4/28/2017

**Report Prepared For:** Leotek Electronics USA, LLC  
1955 Lundy Ave, San Jose, 95131

**Model Number:** ES2-130H-MV-CW-W-DB-450

**Test:** Electrical and Photometric tests

**Standards Used:** Appropriate part or all test guidelines were used for test performed:  
*IESNA LM79: 2008* Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products  
*ANSI NEMA ANSLG C78.377: 2008* Specification of the Chromaticity of Solid State Lighting Products  
*ANSI C82.77:2002:* Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

**Description of Sample:** Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 4/18/17

**Date of Tests:** 4/25/17 - 4/26/17

**Seasoning of Sample:** No seasoning was performed in accordance with IESNA LM-79.

#### Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

### Test Summary

<b>Manufacturer:</b>	Leotek Electronics USA, LLC	
<b>Model Number:</b>	ES2-130H-MV-CW-W-DB-450	
<b>Driver Model Number:</b>	INVENTRONICS EUD-200S490DT	
<b>Total Lumens:</b>	19541.70	
<b>Input Voltage (VAC/60Hz):</b>	120.00	
<b>Input Current (Amp):</b>	1.54	
<b>Input Power (W):</b>	184.20	
<b>Input Power Factor:</b>	1.00	
<b>Current ATHD @ 120V(%):</b>	5%	
<b>Current ATHD @ 277V(%):</b>	12% (0.69A, 179.8W, 0.94PF)	
<b>Efficacy:</b>	106	
<b>Color Rendering Index (CRI):</b>	75	
<b>Correlated Color Temperature (K):</b>	4925	
<b>Chromaticity Coordinate x:</b>	0.3482	
<b>Chromaticity Coordinate y:</b>	0.3627	
<b>Ambient Temperature (°C):</b>	25.0	
<b>Stabilization Time (Hours):</b>	0:45	
<b>Total Operating Time (Hours):</b>	3:40	

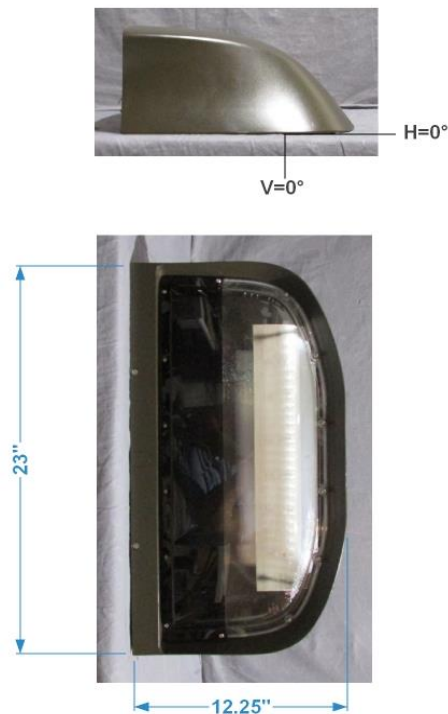
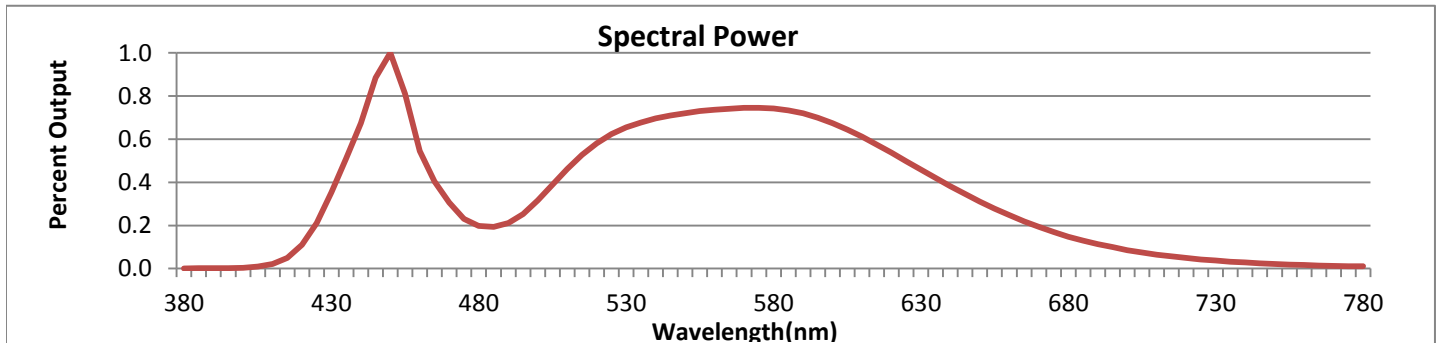


FIG. 1 LUMINAIRE



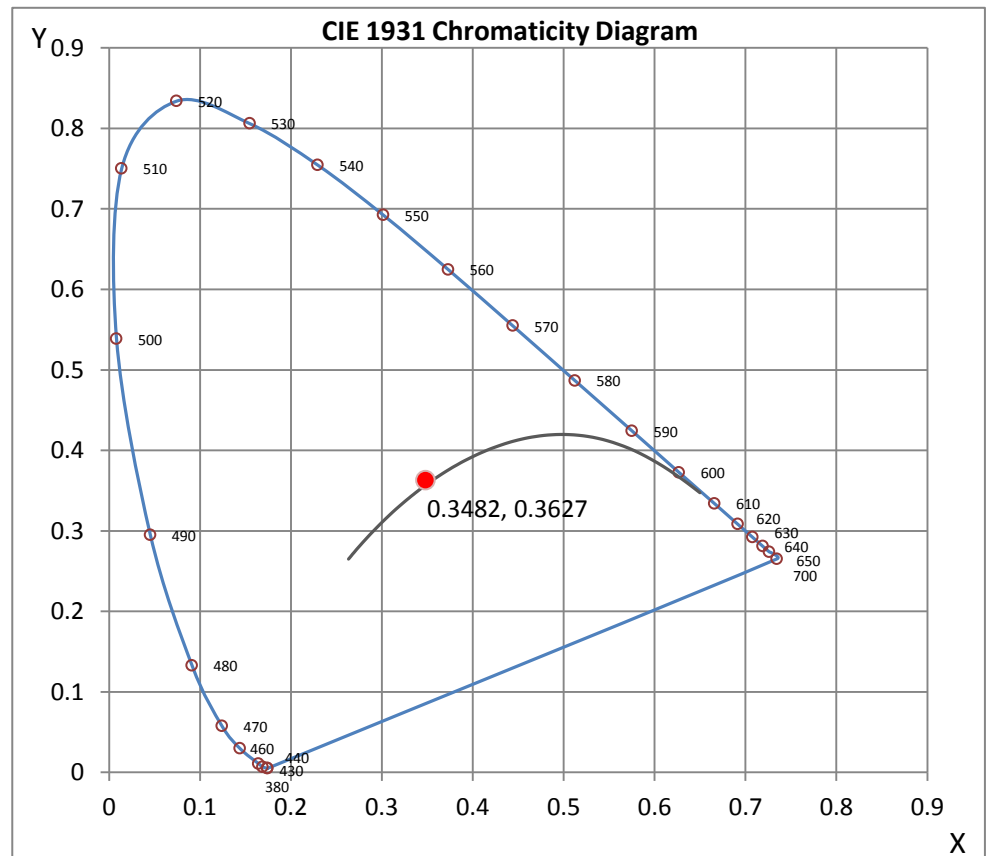
Wavelength	W/m <sup>2</sup> nm	440	0.6747	510	0.4622	580	0.7421	650	0.3107	720	0.0491
380	0.0012	450	1.0000	520	0.5806	590	0.7199	660	0.2476	730	0.0370
390	0.0017	460	0.5452	530	0.6543	600	0.6740	670	0.1930	740	0.0281
400	0.0042	470	0.3060	540	0.6968	610	0.6113	680	0.1479	750	0.0215
410	0.0209	480	0.1976	550	0.7206	620	0.5376	690	0.1126	760	0.0166
420	0.1097	490	0.2107	560	0.7362	630	0.4583	700	0.0857	770	0.0128
430	0.3542	500	0.3167	570	0.7452	640	0.3826	710	0.0649	780	0.0112

#### CRI & CCT

x	0.3482
y	0.3627
u'	0.2093
v'	0.4904
CRI	75.20
CCT	4925
Duv	0.00427

#### R Values

R1	72.43
R2	79.67
R3	84.93
R4	75.49
R5	72.47
R6	71.65
R7	84.41
R8	60.92
R9	-16.36
R10	51.30
R11	72.05
R12	47.05
R13	73.51
R14	91.07





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## Test Methods

### Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

### Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

### Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Jeff Ahn

Test Report Released by:

Jeff Ahn  
Engineering Manager

Test Report Reviewed by:

Steve Kang  
Quality Assurance

*\*Attached are photometric data reports. Total number of pages: 24*

*\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.*



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## Photometric Test Report

### IES ROAD REPORT

PHOTOMETRIC FILENAME : L041706605.IES

### DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L041706605  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 4/28/2017  
[MANUFAC] Leotek Electronics USA, LLC  
[LUMCAT] ES2-130H-MV-CW-W-DB-450  
[LUMINAIRE] outdoor wall lighting product  
[BALLASTCAT] INVENTRONICS EUD-200S490DT  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[INPUT] 120VAC, 184.2W  
[TEST PROCEDURE] IESNA:LM-79-08

### CHARACTERISTICS

IES Classification	Type III
Longitudinal Classification	Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	19542
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	106
Total Luminaire Watts	184.2
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	9262
Maximum Candela Angle	55H 57V
Maximum Candela (<90 Degrees Vertical)	9262
Maximum Candela Angle (<90 Degrees Vertical)	55H 57V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	1695 (8.7% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L041706605.IES**

**LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	1816.8	N.A.	9.3
FM - Front-Medium (30-60)	7987.9	N.A.	40.9
FH - Front-High (60-80)	3653.3	N.A.	18.7
FVH - Front-Very High (80-90)	117.6	N.A.	0.6
BL - Back-Low (0-30)	1544.5	N.A.	7.9
BM - Back-Medium (30-60)	3378.2	N.A.	17.3
BH - Back-High (60-80)	1012.0	N.A.	5.2
BVH - Back-Very High (80-90)	31.5	N.A.	0.2
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	19541.8	N.A.	100.0
BUG Rating	B3-U0-G3		

**ZONAL LUMEN SUMMARY**

Zone	%
0-20	6.8
0-30	17.2
0-40	32.8
0-60	75.4
0-80	99.2
0-90	100
10-90	98.5
20-40	26
20-50	46
40-70	59.9
60-80	23.9
70-80	6.5
80-90	0.8
90-110	0
90-120	0
90-130	0
90-150	0
90-180	0
110-180	0
0-180	100

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L041706605.IES**

**CANDELA TABULATION**

<b>Vert. Angles</b>	<b>Horizontal Angles</b>									
	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>35</b>	<b>40</b>	<b>45</b>
<b>0.0</b>	2819	2819	2819	2819	2819	2819	2819	2819	2819	2819
<b>0.5</b>	2782	2773	2780	2780	2788	2794	2799	2805	2813	2817
<b>1.0</b>	2799	2783	2791	2793	2796	2796	2796	2801	2805	2808
<b>1.5</b>	2807	2795	2803	2807	2809	2812	2809	2807	2807	2806
<b>2.0</b>	2815	2796	2802	2805	2808	2817	2819	2820	2822	2817
<b>2.5</b>	2809	2793	2799	2801	2811	2819	2821	2825	2831	2829
<b>3.0</b>	2807	2794	2802	2804	2811	2814	2825	2823	2827	2823
<b>3.5</b>	2836	2817	2818	2819	2819	2820	2824	2824	2827	2828
<b>4.0</b>	2885	2870	2875	2875	2867	2850	2833	2830	2831	2829
<b>4.5</b>	2902	2891	2893	2899	2897	2889	2882	2856	2842	2836
<b>5.0</b>	2898	2893	2898	2910	2910	2914	2913	2907	2876	2840
<b>5.5</b>	2900	2895	2899	2905	2907	2920	2931	2926	2911	2880
<b>6.0</b>	2925	2923	2920	2918	2918	2923	2921	2937	2932	2921
<b>6.5</b>	2996	2982	2983	2976	2953	2947	2931	2938	2940	2934
<b>7.0</b>	3018	3006	3005	3003	2998	2983	2956	2940	2937	2944
<b>7.5</b>	3039	3043	3041	3027	3020	3021	2998	2968	2943	2939
<b>8.0</b>	3057	3068	3065	3064	3054	3039	3033	3020	2971	2941
<b>8.5</b>	3093	3106	3096	3096	3097	3088	3061	3038	3019	2967
<b>9.0</b>	3144	3157	3154	3146	3137	3115	3097	3056	3040	2994
<b>9.5</b>	3188	3199	3186	3177	3181	3156	3124	3094	3056	3029
<b>10.0</b>	3243	3258	3243	3229	3214	3197	3178	3130	3095	3049
<b>10.5</b>	3354	3363	3348	3326	3284	3243	3203	3152	3116	3068
<b>11.0</b>	3424	3420	3399	3391	3357	3306	3239	3197	3142	3098
<b>11.5</b>	3464	3455	3438	3439	3426	3393	3319	3241	3196	3133
<b>12.0</b>	3580	3567	3545	3508	3468	3436	3375	3309	3230	3174
<b>12.5</b>	3712	3693	3663	3618	3556	3479	3426	3354	3257	3193
<b>13.0</b>	3822	3813	3780	3732	3658	3566	3477	3408	3300	3224
<b>13.5</b>	3914	3906	3872	3832	3780	3681	3555	3457	3374	3265
<b>14.0</b>	4032	4020	3988	3932	3871	3786	3651	3517	3442	3324
<b>14.5</b>	4153	4142	4104	4049	3976	3875	3751	3603	3483	3369
<b>15.0</b>	4262	4241	4213	4155	4069	3979	3868	3726	3545	3450
<b>15.5</b>	4380	4371	4346	4283	4193	4083	3959	3819	3650	3495
<b>16.0</b>	4584	4566	4507	4429	4315	4193	4022	3866	3699	3523
<b>16.5</b>	4748	4718	4655	4588	4474	4316	4128	3959	3791	3583
<b>17.0</b>	4908	4870	4800	4706	4580	4415	4243	4060	3893	3697
<b>17.5</b>	4995	4967	4935	4862	4721	4552	4370	4191	3985	3786
<b>18.0</b>	5113	5087	5057	5004	4896	4696	4497	4280	4072	3848
<b>18.5</b>	5214	5200	5166	5119	5016	4859	4628	4397	4179	3918
<b>19.0</b>	5292	5285	5263	5226	5122	5010	4778	4522	4273	4004
<b>19.5</b>	5454	5439	5408	5372	5267	5123	4931	4617	4313	4039
<b>20.0</b>	5591	5558	5501	5459	5366	5217	5043	4781	4443	4139
<b>20.5</b>	5629	5623	5584	5550	5455	5338	5159	4940	4585	4266
<b>21.0</b>	5711	5720	5680	5643	5518	5423	5253	5055	4707	4358
<b>21.5</b>	5807	5817	5785	5743	5627	5501	5331	5111	4808	4445
<b>22.0</b>	5915	5920	5879	5827	5738	5594	5439	5209	4911	4547
<b>22.5</b>	6005	6010	5977	5918	5827	5692	5509	5307	5017	4656
<b>23.0</b>	6100	6112	6084	6040	5912	5776	5583	5373	5106	4772
<b>23.5</b>	6222	6254	6214	6140	6039	5866	5681	5438	5189	4876
<b>24.0</b>	6361	6351	6328	6260	6126	5980	5762	5534	5289	5015
<b>24.5</b>	6460	6465	6452	6390	6244	6067	5849	5616	5366	5104
<b>25.0</b>	6601	6634	6609	6537	6384	6180	5958	5683	5416	5175
<b>25.5</b>	6803	6767	6751	6648	6480	6286	6042	5762	5479	5240
<b>26.0</b>	6892	6891	6891	6795	6610	6378	6117	5810	5575	5334

**IES ROAD REPORT**  
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**CANDELA TABULATION - (Cont.)**

26.5	6881	6929	6999	6928	6765	6533	6266	5908	5656	5423
27.0	6854	6912	7022	7062	6921	6671	6383	6047	5724	5502
27.5	6915	6980	7049	7069	7043	6795	6478	6134	5811	5572
28.0	7008	7082	7139	7097	7083	6993	6653	6299	5920	5674
28.5	7084	7149	7242	7231	7120	7094	6739	6362	6004	5734
29.0	7145	7218	7333	7332	7209	7105	6906	6482	6112	5792
29.5	7103	7185	7379	7427	7360	7186	7070	6708	6214	5851
30.0	7060	7100	7305	7471	7422	7221	7086	6820	6397	6026
30.5	7142	7188	7253	7345	7452	7314	7083	6979	6519	6110
31.0	7252	7294	7336	7283	7389	7377	7142	7070	6700	6217
31.5	7313	7332	7463	7390	7318	7427	7186	7062	6866	6341
32.0	7357	7392	7560	7515	7354	7366	7320	7058	6996	6486
32.5	7252	7344	7638	7612	7469	7301	7381	7131	7085	6617
33.0	7181	7280	7543	7676	7582	7374	7389	7258	7142	6787
33.5	7122	7244	7485	7652	7699	7552	7329	7366	7158	6939
34.0	7082	7208	7424	7570	7681	7690	7374	7437	7244	7045
34.5	7130	7198	7363	7471	7613	7755	7449	7464	7361	7147
35.0	7109	7223	7392	7428	7536	7713	7612	7414	7497	7223
35.5	7069	7197	7438	7433	7494	7620	7642	7431	7581	7238
36.0	7086	7212	7474	7453	7508	7546	7699	7519	7641	7283
36.5	7128	7240	7521	7461	7526	7519	7641	7689	7598	7471
37.0	7237	7303	7539	7500	7522	7548	7563	7841	7598	7569
37.5	7338	7328	7519	7547	7561	7588	7521	7898	7638	7629
38.0	7250	7300	7495	7607	7614	7582	7524	7858	7802	7699
38.5	7250	7317	7538	7647	7682	7630	7537	7791	7934	7683
39.0	7294	7316	7515	7676	7750	7665	7541	7744	8008	7653
39.5	7301	7329	7497	7683	7781	7775	7547	7728	8089	7675
40.0	7321	7368	7529	7699	7784	7857	7624	7764	8090	7752
40.5	7376	7392	7558	7726	7842	7870	7703	7752	7991	7970
41.0	7450	7461	7580	7769	7866	7871	7812	7794	7946	8154
41.5	7520	7533	7679	7792	7917	7908	7868	7896	7967	8171
42.0	7517	7555	7777	7856	7935	7953	7915	8014	7999	8182
42.5	7528	7542	7801	7949	7999	7995	7954	8084	8081	8088
43.0	7507	7528	7801	7990	8093	8054	7998	8148	8138	8081
43.5	7452	7463	7733	7978	8191	8116	8040	8204	8215	8074
44.0	7404	7416	7657	7945	8207	8197	8091	8230	8295	8118
44.5	7336	7367	7610	7900	8203	8287	8152	8277	8354	8184
45.0	7294	7333	7549	7821	8164	8302	8231	8342	8408	8262
45.5	7279	7308	7479	7772	8098	8285	8324	8425	8436	8347
46.0	7221	7272	7453	7758	8034	8218	8374	8494	8456	8414
46.5	7164	7209	7375	7686	7973	8131	8347	8516	8528	8495
47.0	7098	7153	7279	7598	7923	8071	8288	8600	8619	8553
47.5	7082	7127	7268	7530	7853	8067	8222	8684	8686	8575
48.0	7081	7121	7261	7494	7759	8042	8182	8632	8767	8655
48.5	7084	7130	7283	7505	7727	7998	8167	8589	8832	8741
49.0	7090	7131	7297	7546	7678	7944	8200	8527	8850	8849
49.5	7159	7186	7339	7586	7671	7910	8200	8428	8774	8924
50.0	7326	7336	7412	7586	7693	7913	8218	8443	8730	9020
50.5	7410	7498	7580	7649	7749	7899	8202	8475	8647	9070
51.0	7309	7406	7588	7811	7816	7951	8143	8488	8628	9091
51.5	7107	7216	7500	7848	7933	7985	8116	8538	8594	9079
52.0	6863	6900	7243	7718	8072	8021	8132	8548	8559	8994
52.5	6580	6628	6955	7357	8058	8103	8113	8500	8582	8915
53.0	6378	6407	6691	7182	7845	8256	8146	8498	8627	8866
53.5	6248	6299	6552	6931	7513	8244	8200	8466	8668	8800
54.0	6102	6151	6410	6728	7193	8038	8386	8380	8710	8817



**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L041706605.IES**

**CANDELA TABULATION - (Cont.)**

54.5	6052	6075	6305	6634	6982	7786	8497	8379	8748	8828
55.0	6033	6091	6252	6513	6829	7473	8478	8426	8758	8819
55.5	5789	5863	6144	6468	6731	7188	8206	8589	8735	8837
56.0	5389	5464	5847	6344	6678	7080	8027	8712	8727	8859
56.5	5193	5236	5530	6023	6690	6870	7561	8624	8680	8891
57.0	4885	4963	5244	5731	6511	6815	7338	8316	8743	8939
57.5	4630	4691	4950	5429	6144	6827	7198	8049	8861	8954
58.0	4492	4554	4754	5056	5752	6655	7038	7681	8856	8910
58.5	4412	4468	4661	4880	5424	6380	7078	7565	8615	8873
59.0	4441	4452	4598	4788	5147	5933	6992	7384	8262	8877
59.5	4294	4398	4641	4781	5006	5529	6608	7249	7982	8920
60.0	3950	4074	4424	4840	4970	5299	6207	7279	7855	8870
60.5	3712	3741	4037	4605	5010	5158	5898	7091	7640	8669
61.0	3590	3601	3738	4106	4867	5111	5533	6633	7503	8235
61.5	3466	3517	3647	3868	4448	5154	5427	6372	7457	7963
62.0	3378	3430	3578	3753	4098	5022	5312	6045	7336	7804
62.5	3291	3324	3496	3645	3902	4530	5315	5659	6969	7654
63.0	3135	3178	3385	3597	3815	4245	5155	5556	6544	7597
63.5	2958	2980	3173	3449	3715	4085	4837	5520	6183	7564
64.0	2813	2840	2969	3236	3583	3937	4420	5432	5904	7221
64.5	2653	2695	2813	3035	3413	3831	4320	5251	5740	6866
65.0	2453	2501	2654	2853	3191	3659	4128	4749	5707	6397
65.5	2310	2370	2520	2688	2939	3407	3908	4476	5634	6166
66.0	2165	2203	2352	2560	2802	3235	3781	4298	5155	5950
66.5	2032	2070	2197	2372	2639	3018	3537	4141	4823	5845
67.0	1887	1931	2049	2237	2479	2840	3354	3959	4532	5731
67.5	1748	1788	1894	2080	2327	2675	3140	3747	4419	5352
68.0	1638	1672	1759	1922	2152	2487	2874	3478	4227	4941
68.5	1522	1556	1642	1791	2011	2338	2680	3298	3969	4692
69.0	1404	1433	1520	1656	1872	2167	2554	3082	3744	4552
69.5	1303	1335	1405	1521	1732	2002	2361	2807	3476	4285
70.0	1217	1231	1294	1412	1597	1863	2201	2600	3193	3989
70.5	1112	1132	1193	1295	1469	1707	2056	2470	3046	3782
71.0	1026	1047	1101	1182	1333	1577	1875	2302	2830	3476
71.5	979	971	1023	1105	1250	1449	1731	2133	2583	3252
72.0	879	896	954	1017	1149	1330	1586	1945	2425	3105
72.5	798	813	878	940	1042	1207	1460	1831	2210	2820
73.0	726	739	782	909	962	1114	1332	1682	2035	2535
73.5	643	657	699	769	913	1020	1208	1552	1893	2339
74.0	548	563	609	676	810	934	1118	1396	1766	2170
74.5	491	507	545	603	693	888	1009	1253	1599	1993
75.0	417	432	478	541	616	771	930	1155	1474	1828
75.5	350	365	407	471	559	665	882	1035	1297	1686
76.0	295	307	342	397	495	605	737	940	1193	1530
76.5	248	260	294	344	414	528	654	827	1080	1386
77.0	210	220	249	294	365	462	580	747	970	1261
77.5	180	187	209	247	322	413	523	678	875	1139
78.0	155	161	180	214	272	356	462	589	792	1025
78.5	133	139	154	183	235	308	408	527	703	922
79.0	118	121	133	153	204	271	363	476	628	826
79.5	102	106	116	133	172	230	312	416	562	741
80.0	91	94	101	115	148	200	272	369	501	670
80.5	82	84	89	98	130	176	242	327	443	595
81.0	74	76	80	87	109	148	205	281	384	530
81.5	66	68	71	76	94	127	178	247	340	466
82.0	60	61	64	67	83	111	156	218	295	407

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**CANDELA TABULATION - (Cont.)**

82.5	53	54	57	59	70	92	130	185	258	358
83.0	47	48	50	52	62	80	114	163	218	303
83.5	42	43	44	45	53	67	94	137	185	257
84.0	36	37	38	40	45	56	77	111	158	221
84.5	31	32	33	34	39	47	64	95	130	178
85.0	26	27	28	28	32	38	50	75	105	143
85.5	22	22	23	23	26	31	39	58	83	113
86.0	17	18	18	19	21	25	30	45	63	85
86.5	13	14	14	14	16	18	22	32	45	61
87.0	10	10	11	11	12	13	15	21	29	41
87.5	7	7	7	7	8	9	10	12	17	24
88.0	4	4	5	5	5	5	6	7	8	11
88.5	2	2	2	2	3	3	3	3	4	4
89.0	1	1	1	1	1	2	2	2	2	3
89.5	1	1	1	1	1	1	2	2	2	3
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	Horizontal Angles									
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>
0.0	2819	2819	2819	2819	2819	2819	2819	2819	2819	2819
0.5	2817	2817	2816	2814	2815	2817	2822	2830	2839	2836
1.0	2815	2819	2822	2819	2814	2811	2814	2822	2834	2835
1.5	2803	2812	2811	2816	2815	2809	2811	2821	2837	2840
2.0	2807	2803	2810	2813	2817	2814	2816	2825	2838	2839
2.5	2821	2803	2803	2812	2825	2826	2821	2825	2835	2837
3.0	2825	2829	2815	2807	2819	2827	2817	2823	2842	2844
3.5	2838	2836	2834	2808	2807	2829	2820	2832	2845	2842
4.0	2835	2839	2840	2819	2810	2821	2830	2826	2840	2848
4.5	2832	2837	2841	2831	2814	2829	2837	2824	2851	2854
5.0	2839	2835	2847	2835	2815	2820	2837	2822	2850	2850
5.5	2847	2839	2839	2842	2836	2821	2842	2827	2850	2849
6.0	2870	2837	2841	2848	2845	2825	2851	2835	2859	2853
6.5	2893	2856	2842	2848	2848	2827	2839	2840	2852	2853
7.0	2917	2876	2849	2839	2853	2839	2846	2845	2861	2860
7.5	2933	2909	2854	2842	2854	2851	2851	2858	2871	2868
8.0	2939	2937	2883	2852	2859	2859	2857	2859	2879	2872
8.5	2945	2943	2911	2859	2854	2860	2854	2855	2889	2887
9.0	2958	2949	2933	2866	2857	2867	2851	2870	2889	2891
9.5	2975	2952	2948	2873	2860	2883	2858	2881	2903	2899
10.0	3009	2957	2949	2906	2864	2890	2870	2891	2907	2910
10.5	3026	2960	2957	2928	2875	2887	2881	2902	2918	2920
11.0	3047	2979	2957	2942	2881	2896	2889	2910	2930	2940
11.5	3076	3024	2972	2958	2901	2894	2902	2917	2940	2972
12.0	3116	3059	2985	2974	2923	2898	2918	2931	2947	2992
12.5	3123	3069	3010	2982	2947	2898	2929	2934	2957	2999
13.0	3154	3090	3029	2988	2965	2913	2934	2936	2958	2998
13.5	3196	3135	3063	2989	2972	2912	2939	2946	2975	3017
14.0	3234	3160	3078	3000	2984	2923	2953	2952	2984	3037
14.5	3275	3186	3095	3017	2998	2936	2952	2961	2984	3040
15.0	3327	3227	3136	3030	3000	2945	2959	2969	2998	3067
15.5	3358	3245	3144	3066	3010	2963	2962	2983	3006	3080
16.0	3397	3265	3162	3091	3027	2988	2968	2982	3004	3068
16.5	3457	3306	3188	3107	3036	3005	2969	2994	3013	3083
17.0	3498	3352	3221	3128	3038	3025	2982	3001	3044	3123
17.5	3537	3405	3260	3155	3051	3034	2998	3011	3056	3130

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**CANDELA TABULATION - (Cont.)**

18.0	3597	3450	3284	3163	3062	3046	3000	3021	3066	3141
18.5	3676	3485	3317	3195	3095	3058	3002	3038	3078	3153
19.0	3749	3528	3346	3214	3116	3065	3018	3050	3078	3174
19.5	3800	3551	3395	3243	3145	3075	3028	3063	3092	3187
20.0	3882	3583	3436	3273	3174	3084	3045	3080	3101	3198
20.5	3938	3655	3471	3304	3185	3100	3058	3093	3112	3231
21.0	4057	3781	3549	3371	3217	3107	3070	3100	3139	3255
21.5	4130	3858	3599	3411	3255	3141	3098	3121	3155	3272
22.0	4211	3915	3628	3435	3267	3154	3107	3137	3158	3296
22.5	4295	3970	3673	3476	3302	3171	3121	3157	3198	3317
23.0	4395	4027	3738	3518	3324	3194	3143	3172	3207	3333
23.5	4485	4149	3813	3561	3343	3211	3164	3179	3220	3364
24.0	4613	4226	3896	3599	3390	3229	3175	3194	3257	3385
24.5	4735	4275	3923	3636	3416	3264	3193	3214	3268	3414
25.0	4839	4412	4003	3675	3432	3290	3212	3229	3280	3438
25.5	4933	4454	4059	3702	3481	3312	3224	3236	3314	3465
26.0	5050	4527	4113	3754	3524	3344	3238	3254	3331	3485
26.5	5155	4684	4208	3827	3535	3357	3257	3277	3354	3523
27.0	5237	4754	4279	3889	3588	3378	3260	3287	3383	3551
27.5	5329	4817	4323	3959	3621	3405	3286	3299	3406	3577
28.0	5389	4979	4461	4032	3691	3416	3303	3332	3438	3613
28.5	5455	5034	4503	4055	3740	3460	3323	3339	3464	3652
29.0	5494	5137	4566	4113	3760	3485	3347	3349	3471	3674
29.5	5527	5216	4674	4190	3785	3493	3358	3380	3512	3708
30.0	5650	5299	4750	4228	3839	3535	3384	3401	3550	3748
30.5	5706	5388	4862	4306	3905	3572	3418	3425	3565	3780
31.0	5787	5423	4964	4388	3923	3592	3440	3453	3602	3815
31.5	5855	5414	4993	4418	4013	3635	3474	3478	3632	3850
32.0	5945	5483	5093	4517	4029	3673	3514	3510	3670	3904
32.5	6040	5564	5160	4582	4059	3717	3551	3537	3695	3943
33.0	6158	5604	5195	4650	4156	3779	3581	3560	3739	3964
33.5	6284	5669	5284	4713	4210	3796	3615	3594	3793	4045
34.0	6362	5761	5330	4791	4239	3838	3633	3617	3812	4070
34.5	6396	5775	5354	4869	4343	3913	3671	3638	3836	4075
35.0	6536	5869	5423	4954	4392	3955	3696	3666	3889	4166
35.5	6797	6026	5483	5033	4402	3953	3717	3695	3904	4184
36.0	6877	6062	5498	5097	4502	4022	3749	3726	3953	4248
36.5	6997	6164	5555	5174	4530	4054	3769	3759	3983	4289
37.0	7097	6307	5656	5246	4584	4106	3794	3784	3996	4306
37.5	7204	6434	5753	5301	4710	4197	3854	3827	4062	4394
38.0	7230	6542	5763	5303	4731	4214	3876	3859	4088	4477
38.5	7287	6719	5896	5377	4788	4267	3902	3884	4107	4492
39.0	7405	6893	5997	5431	4911	4323	3948	3934	4186	4556
39.5	7524	6974	6049	5458	4949	4380	3982	3960	4264	4657
40.0	7571	7098	6175	5518	4979	4397	4019	3990	4237	4659
40.5	7688	7228	6293	5567	5100	4475	4054	4040	4308	4700
41.0	7754	7264	6423	5626	5170	4572	4094	4076	4399	4789
41.5	7747	7317	6649	5712	5193	4584	4167	4105	4409	4821
42.0	7784	7453	6809	5813	5259	4628	4192	4167	4466	4880
42.5	7845	7531	6892	5888	5349	4716	4220	4222	4562	4971
43.0	7950	7615	7086	5911	5356	4733	4289	4249	4572	4999
43.5	8107	7712	7168	6104	5405	4805	4319	4291	4613	5051
44.0	8135	7765	7215	6223	5470	4897	4386	4357	4728	5146
44.5	8224	7848	7358	6255	5477	4891	4433	4398	4748	5177
45.0	8221	7934	7438	6379	5515	4950	4462	4447	4842	5264
45.5	8217	7997	7500	6576	5579	5024	4546	4508	4905	5348

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**CANDELA TABULATION - (Cont.)**

46.0	8196	8093	7650	6735	5643	5079	4576	4549	4926	5399
46.5	8241	8203	7688	6774	5731	5146	4613	4625	5071	5516
47.0	8313	8213	7737	6904	5803	5213	4691	4673	5120	5581
47.5	8448	8260	7852	7091	5944	5268	4760	4713	5213	5663
48.0	8503	8348	7971	7145	5977	5324	4792	4812	5299	5751
48.5	8553	8369	8075	7344	6095	5338	4846	4853	5314	5843
49.0	8609	8403	8090	7379	6145	5435	4947	4931	5396	5924
49.5	8630	8446	8204	7480	6350	5507	4999	5054	5584	6039
50.0	8714	8552	8295	7603	6463	5526	5070	5096	5610	6080
50.5	8770	8615	8332	7727	6584	5627	5156	5200	5779	6224
51.0	8903	8701	8315	7839	6615	5658	5224	5234	5790	6346
51.5	9021	8743	8418	7925	6704	5728	5279	5327	5922	6441
52.0	9111	8782	8499	7961	6832	5810	5358	5396	6003	6506
52.5	9168	8802	8519	8115	7071	5906	5428	5459	6155	6644
53.0	9188	8870	8616	8167	7183	6048	5493	5562	6151	6710
53.5	9200	8970	8652	8230	7295	6131	5569	5638	6324	6803
54.0	9187	9097	8704	8332	7421	6157	5624	5682	6353	6899
54.5	9151	9176	8739	8409	7491	6311	5724	5731	6343	6982
55.0	9111	9218	8801	8461	7616	6344	5778	5827	6468	7080
55.5	9055	9218	8801	8460	7768	6548	5881	5883	6527	7168
56.0	9050	9231	8895	8522	7986	6744	5964	5936	6557	7230
56.5	9047	9246	8906	8519	8002	6779	6032	5978	6597	7279
57.0	9008	9262	8999	8561	8082	6811	6071	6021	6628	7336
57.5	8974	9257	9051	8599	8159	6986	6178	6023	6575	7362
58.0	8955	9206	9036	8626	8268	7012	6210	6071	6625	7366
58.5	8953	9172	9052	8665	8309	7237	6296	6093	6643	7334
59.0	8951	9124	9060	8655	8375	7327	6402	6079	6543	7310
59.5	8985	9031	9049	8629	8386	7333	6407	6028	6499	7301
60.0	8947	8956	9028	8647	8382	7397	6463	6006	6415	7201
60.5	8904	8886	9013	8631	8439	7466	6494	5961	6328	7109
61.0	8902	8843	8982	8699	8491	7527	6515	5909	6261	7024
61.5	8936	8787	8920	8719	8471	7678	6524	5827	6120	6847
62.0	8968	8709	8850	8695	8411	7669	6510	5736	5922	6694
62.5	8653	8675	8741	8667	8377	7556	6476	5646	5769	6555
63.0	8284	8651	8636	8596	8289	7493	6408	5529	5579	6305
63.5	7980	8620	8545	8484	8199	7368	6282	5373	5422	6140
64.0	7767	8587	8445	8399	8097	7385	6233	5236	5263	5951
64.5	7591	8597	8349	8335	8017	7389	6088	5080	5038	5698
65.0	7540	8355	8252	8227	7874	7195	5945	4970	4811	5454
65.5	7515	7962	8114	8130	7741	6944	5712	4754	4626	5224
66.0	7215	7520	7990	7970	7593	6879	5621	4638	4397	4992
66.5	6720	7370	8032	7826	7425	6620	5368	4410	4207	4743
67.0	6458	7257	8020	7678	7294	6549	5278	4249	4019	4539
67.5	6137	7236	7878	7530	7135	6409	5140	4092	3799	4273
68.0	5909	7075	7511	7344	6963	6130	4871	3905	3593	4054
68.5	5809	6602	7114	7177	6718	5924	4679	3735	3410	3789
69.0	5659	6248	6783	7005	6540	5728	4590	3561	3209	3663
69.5	5089	5909	6660	6919	6389	5505	4040	3394	3031	3378
70.0	4817	5730	6544	6819	6189	5389	3898	3222	2857	3159
70.5	4558	5605	6382	6655	5978	5181	3870	3050	2683	2924
71.0	4305	5320	5987	6311	5713	4299	3763	2886	2509	2727
71.5	3981	4656	5507	5966	5485	4161	3554	2711	2354	2536
72.0	3824	4250	5263	5694	5322	4034	3450	2603	2206	2362
72.5	3447	4084	5020	5448	5040	3960	3155	2376	2045	2185
73.0	3239	3992	4569	5223	4910	3830	3047	2268	1911	2005
73.5	2994	3741	4194	4866	4438	3781	2865	2123	1778	1860

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**CANDELA TABULATION - (Cont.)**

<b>74.0</b>	2767	3462	4032	4534	3976	3571	2620	1936	1634	1707
<b>74.5</b>	2522	3191	3873	4104	3842	3416	2513	1838	1518	1553
<b>75.0</b>	2310	2930	3554	3929	3757	3190	2339	1707	1401	1428
<b>75.5</b>	2118	2689	3294	3753	3592	2978	2104	1536	1277	1303
<b>76.0</b>	1949	2514	3084	3415	3414	2828	2006	1450	1169	1186
<b>76.5</b>	1796	2231	2795	3150	3149	2572	1841	1325	1074	1075
<b>77.0</b>	1624	2041	2570	2896	2920	2371	1694	1215	982	976
<b>77.5</b>	1457	1929	2375	2651	2699	2200	1562	1113	892	879
<b>78.0</b>	1322	1739	2137	2423	2470	2028	1438	1015	803	795
<b>78.5</b>	1191	1544	1957	2213	2263	1855	1311	922	734	716
<b>79.0</b>	1070	1442	1805	2017	2066	1705	1197	835	660	639
<b>79.5</b>	971	1282	1603	1829	1879	1557	1089	752	588	573
<b>80.0</b>	869	1127	1432	1656	1695	1403	979	673	530	510
<b>80.5</b>	774	1042	1299	1492	1532	1267	881	599	469	449
<b>81.0</b>	689	908	1137	1322	1364	1135	786	529	410	396
<b>81.5</b>	613	789	1003	1164	1208	1005	697	466	362	346
<b>82.0</b>	537	716	892	1028	1061	883	610	404	309	298
<b>82.5</b>	479	614	767	888	919	750	509	340	265	255
<b>83.0</b>	409	545	676	771	786	656	449	295	225	216
<b>83.5</b>	352	459	579	660	670	557	380	248	190	181
<b>84.0</b>	303	389	481	553	556	452	304	200	156	150
<b>84.5</b>	248	327	400	454	450	382	253	166	127	123
<b>85.0</b>	199	257	318	361	353	291	197	130	101	98
<b>85.5</b>	158	204	246	274	265	213	143	97	78	77
<b>86.0</b>	120	151	183	198	187	152	99	69	58	59
<b>86.5</b>	83	103	123	132	120	92	61	46	41	43
<b>87.0</b>	56	66	75	79	69	49	32	28	28	30
<b>87.5</b>	32	38	42	42	34	21	16	17	19	21
<b>88.0</b>	14	16	18	19	15	9	10	12	13	14
<b>88.5</b>	5	6	8	8	8	8	9	9	10	11
<b>89.0</b>	3	4	5	5	5	7	8	8	9	10
<b>89.5</b>	3	4	5	4	5	6	7	8	9	10
<b>90.0</b>	0	0	0	0	0	0	0	0	0	0

**Vert. Angles**      **Horizontal Angles**

	<b><u>100</u></b>	<b><u>105</u></b>	<b><u>110</u></b>	<b><u>115</u></b>	<b><u>120</u></b>	<b><u>125</u></b>	<b><u>130</u></b>	<b><u>135</u></b>	<b><u>140</u></b>	<b><u>145</u></b>
<b>0.0</b>	2819	2819	2819	2819	2819	2819	2819	2819	2819	2819
<b>0.5</b>	2834	2827	2819	2816	2819	2825	2836	2849	2862	2868
<b>1.0</b>	2830	2819	2817	2826	2841	2859	2873	2883	2888	2894
<b>1.5</b>	2834	2821	2827	2846	2875	2889	2896	2904	2907	2915
<b>2.0</b>	2828	2825	2846	2874	2891	2893	2906	2927	2947	2970
<b>2.5</b>	2829	2843	2873	2893	2905	2920	2943	2979	3001	3010
<b>3.0</b>	2837	2856	2889	2899	2917	2952	2992	3016	3034	3053
<b>3.5</b>	2846	2881	2901	2917	2948	2991	3019	3040	3066	3104
<b>4.0</b>	2850	2888	2911	2947	2993	3021	3052	3096	3143	3169
<b>4.5</b>	2852	2896	2914	2955	3020	3038	3096	3150	3186	3218
<b>5.0</b>	2865	2915	2939	2988	3028	3069	3133	3185	3230	3283
<b>5.5</b>	2880	2925	2960	3020	3050	3116	3180	3247	3307	3337
<b>6.0</b>	2890	2929	2981	3031	3069	3153	3213	3286	3342	3391
<b>6.5</b>	2897	2938	3014	3055	3135	3208	3292	3357	3386	3448
<b>7.0</b>	2898	2951	3018	3083	3179	3255	3340	3401	3462	3513
<b>7.5</b>	2919	2970	3045	3108	3212	3323	3382	3460	3516	3581
<b>8.0</b>	2938	3017	3076	3158	3258	3357	3411	3479	3549	3612
<b>8.5</b>	2950	3020	3081	3186	3287	3382	3455	3533	3601	3642
<b>9.0</b>	2969	3034	3110	3218	3334	3415	3509	3581	3634	3639

**IES ROAD REPORT**  
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**CANDELA TABULATION - (Cont.)**

9.5	2972	3068	3149	3274	3380	3467	3563	3633	3642	3613
10.0	2982	3084	3188	3299	3408	3510	3602	3657	3637	3609
10.5	2998	3101	3233	3361	3451	3570	3642	3650	3626	3659
11.0	3016	3116	3259	3398	3491	3613	3676	3650	3645	3723
11.5	3040	3145	3281	3414	3516	3641	3691	3644	3680	3788
12.0	3064	3182	3334	3455	3566	3681	3679	3652	3760	3819
12.5	3083	3216	3380	3502	3626	3712	3663	3702	3801	3798
13.0	3091	3223	3397	3547	3690	3716	3675	3789	3830	3764
13.5	3118	3271	3453	3579	3717	3713	3705	3834	3815	3780
14.0	3135	3290	3484	3634	3746	3709	3759	3863	3802	3831
14.5	3161	3328	3517	3680	3768	3725	3835	3852	3822	3894
15.0	3190	3376	3548	3727	3785	3756	3868	3846	3859	3918
15.5	3194	3384	3570	3739	3817	3787	3899	3857	3935	3885
16.0	3192	3405	3602	3776	3800	3884	3898	3894	3956	3832
16.5	3245	3490	3677	3830	3800	3934	3886	3952	3911	3870
17.0	3253	3511	3699	3845	3828	3959	3895	3984	3881	3928
17.5	3259	3536	3734	3856	3849	3973	3918	3998	3888	3989
18.0	3286	3556	3769	3867	3885	3976	3959	3966	3928	4004
18.5	3304	3567	3784	3865	3937	3948	4027	3931	3983	3992
19.0	3334	3612	3830	3881	3980	3961	4064	3944	4022	3935
19.5	3353	3646	3846	3885	4020	3977	4057	3997	4042	3894
20.0	3370	3642	3871	3904	4034	4030	3995	4056	3999	3859
20.5	3437	3678	3896	3930	4044	4056	3995	4083	3982	3847
21.0	3475	3744	3917	3938	4053	4106	4009	4114	3945	3847
21.5	3501	3775	3949	3998	4032	4124	4051	4094	3914	3830
22.0	3533	3795	3974	4052	4052	4114	4103	4042	3903	3808
22.5	3568	3870	4001	4090	4070	4117	4150	4006	3901	3792
23.0	3590	3875	4014	4128	4115	4070	4177	3984	3883	3781
23.5	3662	3960	4024	4164	4168	4073	4160	3976	3874	3771
24.0	3712	4000	4048	4174	4219	4117	4112	3976	3865	3768
24.5	3715	4012	4071	4181	4243	4156	4100	3968	3864	3754
25.0	3749	4050	4096	4195	4245	4205	4035	3937	3844	3727
25.5	3793	4081	4133	4222	4221	4249	4019	3924	3829	3702
26.0	3818	4121	4170	4244	4181	4261	4022	3918	3814	3689
26.5	3877	4167	4213	4266	4213	4272	4020	3907	3789	3695
27.0	3906	4196	4256	4317	4219	4190	4012	3897	3765	3691
27.5	3935	4214	4328	4366	4267	4183	4001	3892	3753	3655
28.0	3994	4250	4380	4404	4300	4181	3994	3876	3748	3635
28.5	4035	4293	4408	4452	4374	4137	3985	3850	3743	3593
29.0	4057	4320	4435	4449	4398	4133	3984	3816	3716	3569
29.5	4108	4356	4432	4472	4434	4138	3983	3802	3685	3561
30.0	4169	4385	4468	4432	4429	4117	3977	3797	3660	3536
30.5	4221	4430	4466	4411	4386	4120	3932	3800	3628	3506
31.0	4256	4451	4498	4433	4381	4132	3895	3773	3600	3490
31.5	4299	4478	4542	4436	4333	4123	3879	3743	3592	3447
32.0	4353	4514	4572	4477	4324	4101	3873	3720	3574	3407
32.5	4396	4559	4626	4512	4318	4113	3875	3691	3541	3345
33.0	4424	4592	4660	4585	4293	4076	3887	3693	3527	3288
33.5	4484	4622	4702	4600	4310	4066	3885	3673	3480	3236
34.0	4532	4677	4744	4634	4313	4036	3840	3652	3424	3187
34.5	4544	4709	4765	4634	4293	4011	3828	3629	3350	3151
35.0	4612	4760	4776	4648	4289	3993	3811	3591	3309	3120
35.5	4666	4817	4762	4606	4292	3997	3803	3556	3246	3058
36.0	4705	4837	4791	4631	4253	3983	3786	3520	3228	3021
36.5	4778	4892	4753	4562	4253	3996	3785	3494	3192	2984
37.0	4811	4933	4760	4543	4231	3982	3764	3416	3133	2942

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**CANDELA TABULATION - (Cont.)**

37.5	4855	4965	4804	4533	4195	3954	3716	3368	3109	2925
38.0	4913	4979	4822	4532	4172	3947	3685	3334	3073	2857
38.5	4942	5008	4853	4537	4166	3935	3630	3280	3004	2768
39.0	4988	5043	4894	4530	4160	3911	3596	3246	3002	2702
39.5	5049	5057	4930	4529	4153	3908	3574	3215	2978	2665
40.0	5076	5101	4953	4523	4142	3884	3461	3147	2895	2589
40.5	5121	5136	4982	4517	4141	3858	3411	3113	2828	2539
41.0	5179	5176	5005	4494	4137	3823	3390	3096	2795	2504
41.5	5221	5198	5015	4495	4147	3772	3338	3031	2697	2446
42.0	5273	5235	5026	4480	4132	3723	3300	3009	2649	2403
42.5	5319	5256	5035	4431	4113	3694	3271	2969	2596	2341
43.0	5376	5299	5016	4447	4118	3634	3232	2875	2536	2274
43.5	5432	5331	5005	4426	4086	3559	3180	2824	2480	2210
44.0	5480	5369	4973	4418	4013	3510	3139	2747	2435	2153
44.5	5546	5395	4926	4403	4047	3489	3119	2655	2349	2073
45.0	5610	5425	4966	4424	3964	3445	3071	2649	2306	2035
45.5	5677	5464	4952	4432	3918	3366	2981	2561	2243	1977
46.0	5724	5461	4895	4421	3917	3354	2955	2517	2159	1912
46.5	5790	5515	4927	4440	3817	3322	2891	2481	2125	1876
47.0	5843	5551	4940	4254	3721	3271	2795	2391	2071	1816
47.5	5890	5592	4887	4244	3719	3228	2729	2328	2008	1723
48.0	5921	5588	4871	4047	3729	3220	2720	2278	1960	1672
48.5	5994	5609	4857	4024	3672	3171	2656	2220	1888	1610
49.0	6059	5636	4849	4030	3617	3106	2552	2150	1840	1510
49.5	6130	5715	4890	3983	3521	3004	2516	2116	1773	1471
50.0	6207	5761	4798	4018	3477	2937	2415	2040	1704	1409
50.5	6271	5725	4848	3941	3488	2882	2355	1970	1621	1321
51.0	6293	5654	4796	3873	3392	2801	2292	1929	1554	1294
51.5	6343	5732	4839	3872	3391	2782	2214	1846	1494	1223
52.0	6412	5739	4837	3910	3303	2671	2183	1805	1417	1150
52.5	6467	5730	4557	3837	3224	2540	2085	1696	1378	1097
53.0	6568	5809	4592	3773	3150	2507	2045	1644	1307	1058
53.5	6622	5726	4529	3757	3121	2468	1984	1602	1243	1009
54.0	6648	5776	4484	3694	3041	2403	1917	1505	1187	978
54.5	6646	5663	4193	3698	2973	2334	1850	1436	1111	945
55.0	6750	5748	4213	3644	2842	2238	1786	1374	1080	931
55.5	6805	5713	4131	3582	2814	2181	1716	1318	1048	902
56.0	6874	5706	4192	3507	2673	2102	1635	1244	984	886
56.5	6911	5577	4119	3435	2652	2075	1563	1202	968	761
57.0	6932	5642	3972	3349	2575	2011	1491	1127	946	723
57.5	6871	5496	3958	3266	2496	1945	1454	1082	919	673
58.0	6946	5571	3980	3191	2371	1829	1350	1020	900	640
58.5	6926	5425	3893	3111	2355	1757	1290	994	885	602
59.0	6937	5432	3848	3027	2232	1683	1227	963	739	567
59.5	6824	5384	3763	2915	2186	1623	1148	920	691	530
60.0	6765	4995	3845	2889	2153	1579	1120	925	652	498
60.5	6685	4916	3788	2828	2042	1482	1071	916	614	464
61.0	6606	4817	3693	2689	1962	1380	1017	871	589	441
61.5	6564	4403	3695	2605	1882	1340	985	778	550	405
62.0	6436	4288	3593	2576	1793	1270	951	687	514	386
62.5	6217	4293	3466	2462	1746	1198	926	646	482	363
63.0	6037	4234	3371	2372	1673	1173	922	609	442	338
63.5	5948	4215	3370	2280	1554	1082	877	575	423	325
64.0	5776	4108	3183	2187	1527	1029	874	554	405	308
64.5	5578	4083	3160	2094	1419	976	835	512	374	294
65.0	5371	3945	2976	2002	1386	974	717	479	344	280

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**CANDELA TABULATION - (Cont.)**

65.5	5183	3896	2886	1919	1312	951	617	448	330	265
66.0	4696	3839	2769	1835	1255	923	601	422	308	251
66.5	4556	3765	2726	1749	1155	907	555	396	298	244
67.0	4108	3689	2536	1669	1126	879	533	377	286	231
67.5	3979	3533	2492	1592	1032	862	489	344	267	221
68.0	3876	3327	2264	1511	1009	840	461	322	250	212
68.5	3752	3163	2216	1456	993	707	438	301	240	201
69.0	3677	2997	2102	1378	970	593	412	288	228	192
69.5	3475	2836	1990	1267	917	562	387	272	220	185
70.0	3270	2732	1894	1200	889	530	363	257	209	173
70.5	3085	2527	1784	1166	869	496	336	240	195	165
71.0	2863	2314	1626	1054	840	479	310	225	188	158
71.5	2672	2207	1555	1010	835	442	297	212	176	148
72.0	2498	2048	1455	982	676	416	277	201	167	141
72.5	2317	1913	1365	943	569	401	251	190	160	135
73.0	2132	1780	1274	914	533	364	241	179	150	126
73.5	1975	1647	1181	886	500	341	225	169	142	120
74.0	1818	1530	1103	873	468	327	205	159	135	114
74.5	1664	1417	1023	842	436	296	196	147	126	106
75.0	1527	1306	968	689	406	276	180	140	118	100
75.5	1393	1201	870	565	377	256	172	134	113	96
76.0	1274	1123	826	522	349	229	157	123	106	89
76.5	1163	1030	741	482	322	218	145	115	98	82
77.0	1054	939	693	444	305	207	135	107	92	78
77.5	955	871	618	403	270	182	127	99	85	71
78.0	865	781	565	369	255	166	114	91	79	67
78.5	779	709	529	348	232	157	106	84	73	62
79.0	699	651	468	307	206	139	99	78	68	57
79.5	629	578	424	286	192	125	88	70	61	52
80.0	560	517	379	257	172	117	81	65	56	47
80.5	494	468	344	225	152	100	73	58	51	43
81.0	436	410	296	206	139	95	66	53	46	39
81.5	381	360	268	176	120	82	60	48	41	35
82.0	331	313	235	154	106	71	53	43	37	31
82.5	283	270	197	138	94	66	47	38	33	28
83.0	240	230	173	114	79	56	42	34	29	25
83.5	203	195	147	98	68	49	36	30	26	22
84.0	168	162	119	85	59	43	32	26	22	19
84.5	137	132	103	68	49	35	28	23	20	17
85.0	110	107	82	56	41	31	24	20	17	14
85.5	86	83	65	45	34	26	21	17	15	12
86.0	65	64	52	36	28	22	18	15	12	11
86.5	47	46	39	29	23	19	15	13	11	9
87.0	33	33	28	22	18	15	13	11	9	8
87.5	22	22	20	17	15	13	11	10	8	7
88.0	15	16	15	14	13	12	11	9	8	7
88.5	12	13	12	12	12	12	10	9	8	7
89.0	11	12	12	12	12	12	11	9	8	7
89.5	10	11	12	12	12	11	11	9	8	7
90.0	0	0	0	0	0	0	0	0	0	0

**Vert.  
Angles**

**Horizontal Angles**

	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0.0	2819	2819	2819	2819	2819	2819	2819
0.5	2872	2870	2868	2864	2859	2855	2849



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**CANDELA TABULATION - (Cont.)**

1.0	2897	2898	2895	2892	2889	2885	2883
1.5	2932	2950	2956	2952	2950	2950	2950
2.0	2994	3004	3006	2995	2988	2987	2988
2.5	3018	3030	3038	3043	3046	3047	3045
3.0	3070	3089	3105	3110	3116	3122	3123
3.5	3130	3146	3157	3161	3170	3182	3184
4.0	3186	3202	3225	3237	3242	3249	3260
4.5	3258	3281	3297	3309	3305	3310	3323
5.0	3321	3337	3343	3352	3370	3377	3377
5.5	3355	3381	3409	3418	3436	3443	3451
6.0	3411	3474	3493	3516	3525	3529	3542
6.5	3481	3516	3538	3556	3570	3570	3588
7.0	3555	3596	3587	3582	3586	3571	3594
7.5	3597	3616	3593	3581	3567	3550	3561
8.0	3621	3614	3578	3556	3541	3533	3535
8.5	3620	3596	3556	3568	3576	3581	3588
9.0	3608	3594	3596	3627	3656	3658	3672
9.5	3600	3636	3682	3706	3723	3718	3719
10.0	3642	3710	3754	3755	3731	3713	3708
10.5	3727	3780	3761	3739	3696	3686	3687
11.0	3777	3778	3733	3713	3697	3708	3723
11.5	3785	3743	3722	3747	3767	3790	3820
12.0	3762	3739	3762	3820	3820	3831	3845
12.5	3748	3791	3825	3841	3809	3802	3807
13.0	3786	3855	3848	3812	3762	3750	3746
13.5	3853	3869	3806	3766	3748	3758	3771
14.0	3881	3829	3773	3797	3811	3823	3834
14.5	3849	3801	3813	3864	3869	3880	3879
15.0	3836	3836	3891	3922	3896	3893	3879
15.5	3833	3904	3931	3922	3861	3817	3801
16.0	3896	3932	3931	3877	3817	3790	3784
16.5	3932	3947	3885	3828	3768	3743	3746
17.0	3963	3902	3830	3783	3741	3730	3731
17.5	3956	3847	3784	3766	3730	3715	3717
18.0	3908	3809	3774	3745	3695	3694	3698
18.5	3847	3784	3754	3715	3695	3687	3689
19.0	3817	3778	3722	3703	3681	3664	3656
19.5	3811	3761	3713	3686	3656	3639	3632
20.0	3796	3746	3697	3667	3645	3619	3618
20.5	3776	3720	3677	3649	3614	3584	3596
21.0	3775	3714	3655	3622	3587	3569	3582
21.5	3758	3693	3620	3598	3575	3553	3563
22.0	3735	3674	3608	3581	3561	3543	3563
22.5	3729	3656	3594	3562	3551	3536	3536
23.0	3707	3627	3568	3556	3532	3500	3500
23.5	3684	3601	3570	3539	3492	3446	3462
24.0	3677	3594	3556	3476	3435	3402	3394
24.5	3646	3578	3496	3433	3401	3378	3373
25.0	3640	3551	3464	3407	3392	3377	3382
25.5	3631	3515	3437	3394	3381	3354	3375
26.0	3604	3481	3418	3379	3343	3308	3333
26.5	3571	3457	3412	3337	3304	3269	3298
27.0	3527	3438	3365	3306	3273	3223	3239
27.5	3503	3426	3337	3275	3219	3157	3163
28.0	3496	3398	3308	3208	3140	3086	3098
28.5	3474	3353	3257	3145	3087	3046	3055

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**CANDELA TABULATION - (Cont.)**

29.0	3447	3312	3197	3089	3056	3024	3049
29.5	3429	3271	3143	3051	3038	3006	3015
30.0	3393	3200	3088	3031	2998	2948	2946
30.5	3355	3154	3066	2998	2944	2895	2906
31.0	3306	3125	3051	2944	2893	2859	2862
31.5	3228	3098	2998	2895	2858	2824	2826
32.0	3186	3069	2941	2857	2826	2783	2782
32.5	3159	3028	2898	2828	2784	2727	2721
33.0	3128	2962	2855	2775	2695	2627	2600
33.5	3098	2917	2822	2712	2610	2548	2540
34.0	3039	2882	2747	2623	2554	2512	2516
34.5	2992	2839	2679	2573	2507	2475	2480
35.0	2961	2806	2617	2526	2466	2426	2436
35.5	2914	2720	2557	2481	2423	2372	2388
36.0	2883	2637	2503	2431	2376	2321	2333
36.5	2815	2594	2467	2381	2327	2271	2274
37.0	2726	2559	2420	2327	2263	2206	2201
37.5	2660	2504	2365	2269	2199	2141	2127
38.0	2608	2458	2322	2215	2148	2092	2070
38.5	2563	2421	2270	2138	2070	2018	2003
39.0	2516	2359	2183	2077	1999	1952	1944
39.5	2464	2302	2126	2013	1954	1904	1895
40.0	2412	2250	2074	1955	1902	1852	1847
40.5	2341	2173	2004	1902	1843	1790	1790
41.0	2280	2108	1950	1847	1780	1722	1720
41.5	2226	2052	1902	1790	1712	1655	1657
42.0	2172	1987	1843	1719	1626	1573	1575
42.5	2104	1942	1787	1652	1551	1486	1485
43.0	2036	1862	1694	1568	1486	1442	1440
43.5	1987	1815	1645	1520	1426	1380	1377
44.0	1931	1745	1579	1457	1365	1320	1316
44.5	1863	1672	1510	1389	1301	1263	1257
45.0	1827	1600	1443	1324	1248	1211	1204
45.5	1762	1532	1379	1267	1199	1161	1154
46.0	1676	1465	1316	1214	1145	1106	1097
46.5	1622	1406	1261	1158	1087	1043	1032
47.0	1538	1347	1211	1108	1036	981	979
47.5	1471	1287	1151	1047	975	961	931
48.0	1429	1245	1102	988	950	890	876
48.5	1371	1192	1046	952	874	847	835
49.0	1286	1120	992	935	843	818	811
49.5	1229	1064	963	853	810	782	774
50.0	1172	1011	932	819	773	740	730
50.5	1116	974	856	782	735	700	695
51.0	1089	954	821	744	688	651	643
51.5	1026	936	788	695	632	588	579
52.0	970	899	735	648	592	555	548
52.5	950	803	703	613	554	517	511
53.0	939	758	653	567	513	481	475
53.5	917	724	615	532	480	448	443
54.0	852	693	579	492	444	417	412
54.5	771	641	533	463	415	390	385
55.0	744	611	498	432	386	366	360
55.5	693	564	466	403	363	344	336
56.0	662	521	430	375	342	325	319
56.5	615	496	411	358	326	309	304

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L041706605.IES**

**CANDELA TABULATION - (Cont.)**

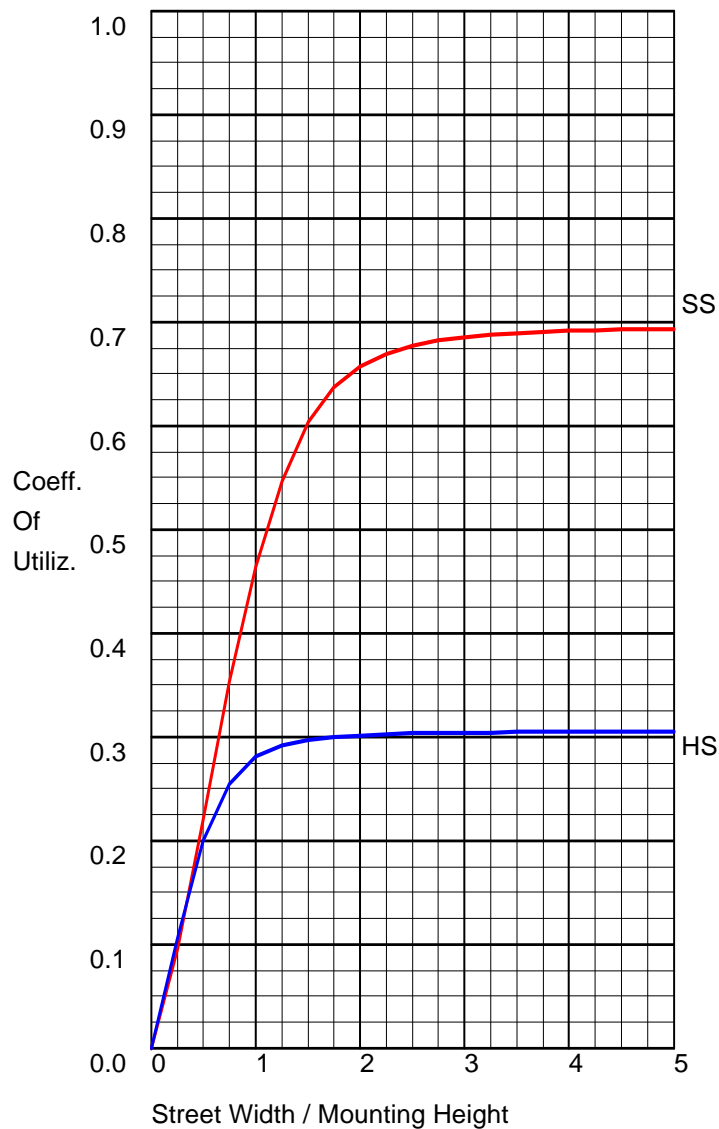
57.0	579	471	388	334	307	293	289
57.5	536	436	362	319	292	279	276
58.0	506	412	341	305	281	270	266
58.5	466	383	324	291	271	259	256
59.0	445	358	306	277	258	248	246
59.5	407	343	295	268	250	240	238
60.0	390	330	285	255	238	229	228
60.5	366	311	269	245	229	219	218
61.0	346	297	260	236	222	213	212
61.5	333	283	248	226	212	205	204
62.0	312	275	241	219	205	198	197
62.5	300	266	233	209	197	191	190
63.0	284	253	224	202	189	183	183
63.5	275	245	215	195	182	177	176
64.0	261	233	206	187	176	170	170
64.5	253	222	196	179	168	163	163
65.0	242	215	191	173	162	157	157
65.5	231	207	185	166	156	152	152
66.0	219	197	177	160	150	146	146
66.5	212	191	170	153	144	140	140
67.0	201	181	163	148	139	135	136
67.5	193	173	155	141	133	130	130
68.0	183	167	150	136	128	125	125
68.5	176	160	145	130	123	120	121
69.0	168	152	138	125	118	115	115
69.5	160	147	133	120	113	110	110
70.0	151	138	126	114	109	106	106
70.5	146	133	121	110	104	101	101
71.0	139	128	117	104	99	97	97
71.5	131	121	110	100	95	92	92
72.0	124	116	105	95	90	88	88
72.5	119	110	101	90	86	84	84
73.0	112	104	95	86	82	80	80
73.5	106	99	90	82	77	75	75
74.0	101	94	86	77	73	71	71
74.5	94	88	80	73	69	68	68
75.0	89	83	76	69	65	64	64
75.5	84	78	71	65	61	60	59
76.0	79	73	66	61	58	56	56
76.5	73	68	62	57	54	52	53
77.0	69	64	59	53	50	49	49
77.5	64	59	54	49	47	45	46
78.0	59	55	50	45	43	42	42
78.5	55	51	47	42	40	38	38
79.0	50	46	42	38	37	35	35
79.5	46	43	39	35	33	32	32
80.0	42	39	36	32	30	29	30
80.5	38	35	32	29	28	27	27
81.0	35	32	29	26	25	24	24
81.5	31	29	26	24	22	21	21
82.0	28	26	23	21	20	19	19
82.5	25	23	21	18	18	17	17
83.0	22	20	18	16	16	15	15
83.5	19	17	16	14	14	13	13
84.0	17	15	14	13	12	12	11
84.5	14	13	12	11	10	10	10

IES ROAD REPORT  
PHOTOMETRIC FILENAME : L041706605.IES

CANDELA TABULATION - (Cont.)

85.0	12	11	10	10	9	8	8
85.5	11	10	9	8	8	7	7
86.0	9	8	8	7	7	6	6
86.5	8	7	6	6	6	5	5
87.0	7	6	6	5	5	5	5
87.5	6	5	5	4	4	4	4
88.0	6	5	4	4	3	3	3
88.5	6	5	4	4	3	3	3
89.0	6	5	4	3	3	3	3
89.5	6	5	4	4	3	3	3
90.0	0	0	0	0	0	0	0

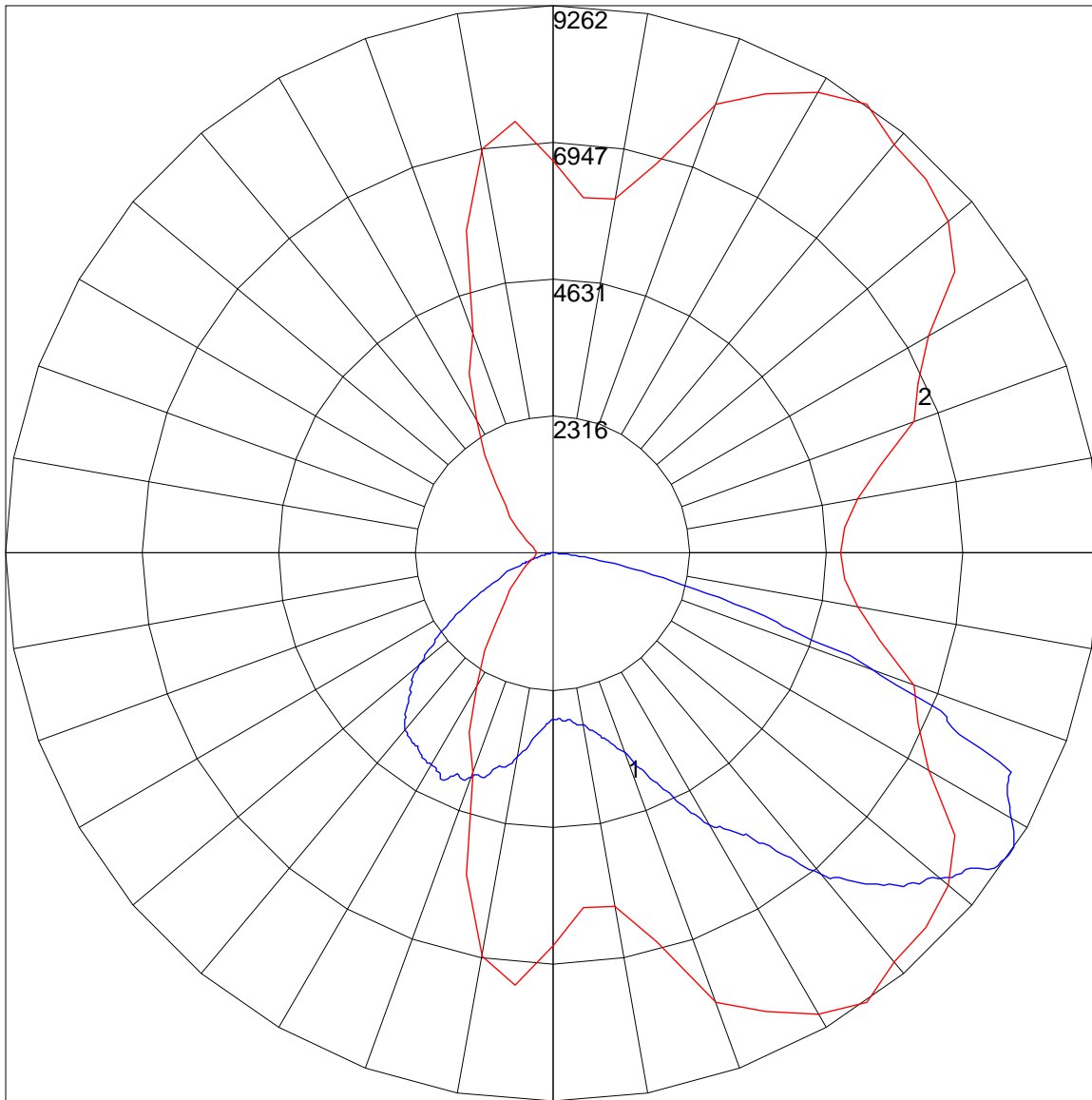
### COEFFICIENTS OF UTILIZATION



### FLUX DISTRIBUTION

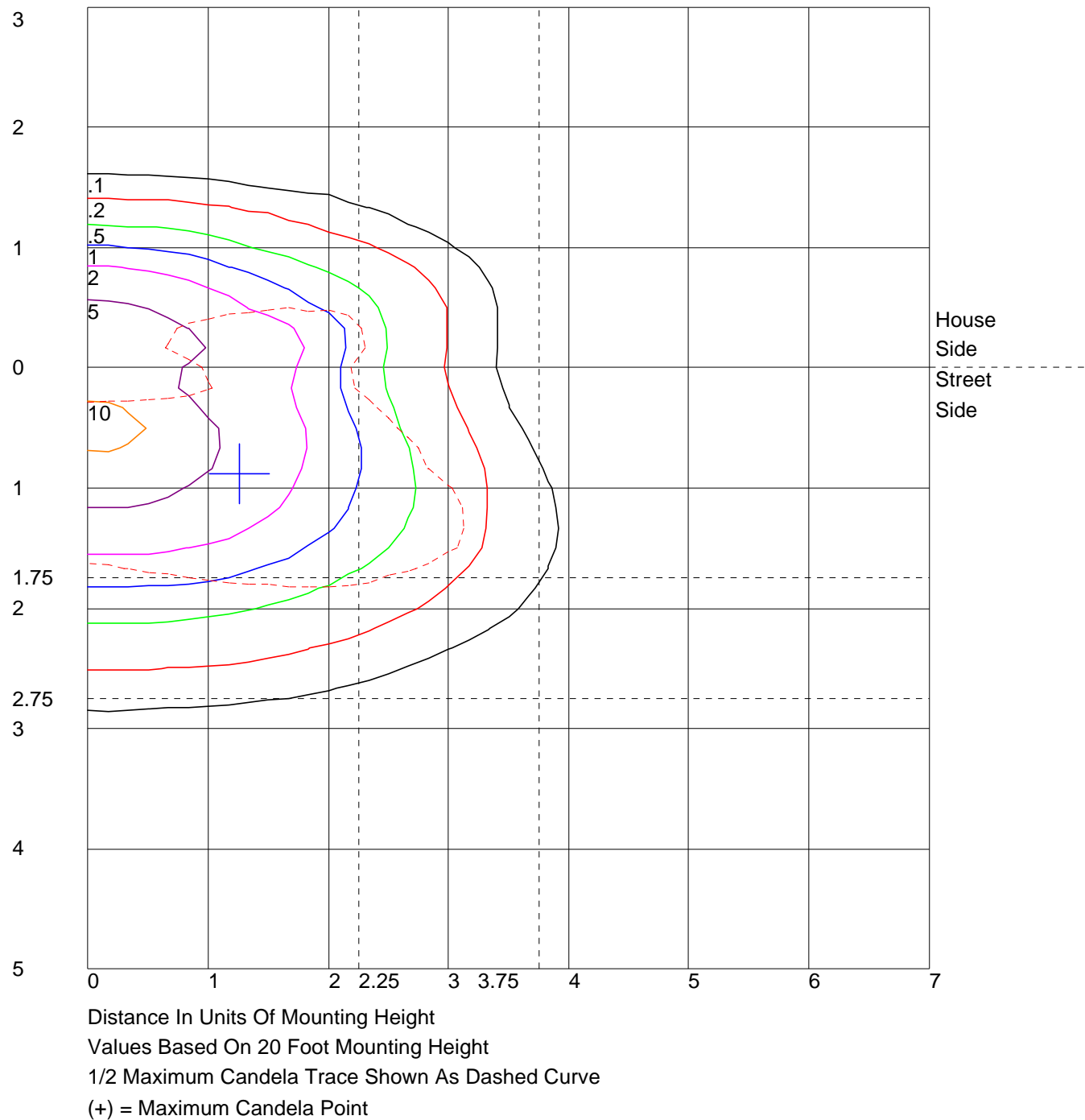
	Lumens	Percent Of Luminaire
Downward Street Side	13575.6	69.5
Downward House Side	5966.2	30.5
Downward Total	19541.7	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	19541.7	100.0

POLAR GRAPH

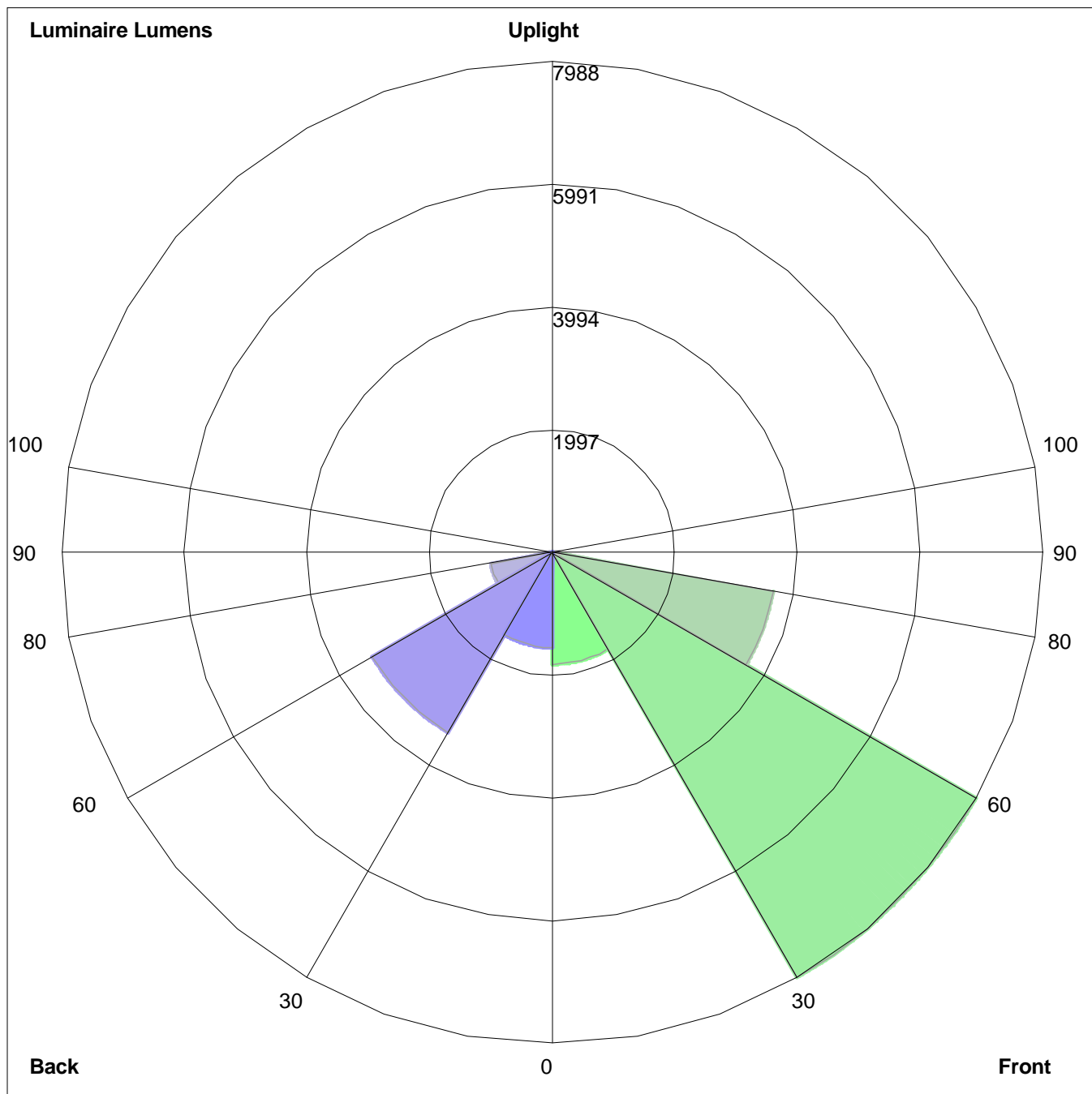


Maximum Candela = 9262 Located At Horizontal Angle = 55, Vertical Angle = 57  
# 1 - Vertical Plane Through Horizontal Angles (55 - 235) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (57) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:  
Front: Low=1816.8, Medium=7987.9, High=3653.3, Very High=117.6  
Back: Low=1544.5, Medium=3378.2, High= 1012.0, Very High=31.5  
Uplight: Low=0.0, High=0.0

BUG Rating : B3-U0-G3