



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

Report No: L041706606



**Report No:** L041706606

**Issue Date:** 5/1/2017

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

**Model Number:** ES2-130H-MV-CW-FT-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:** 4/27/17 - 4/28/17

**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-FT-DB-450	
<b>Driver Model Number:</b>	INVENTRONICS EUD-200S490DT	
<b>Total Lumens:</b>	19149.70	
<b>Input Voltage (VAC/60Hz):</b>	120.00	
<b>Input Current (Amp):</b>	1.52	
<b>Input Power (W):</b>	181.68	
<b>Input Power Factor:</b>	1.00	
<b>Current ATHD @ 120V(%):</b>	4%	
<b>Current ATHD @ 277V(%):</b>	12% (0.68A, 177.18W, 0.94PF)	
<b>Efficacy:</b>	105	
<b>Color Rendering Index (CRI):</b>	75	
<b>Correlated Color Temperature (K):</b>	4884	
<b>Chromaticity Coordinate x:</b>	0.3496	
<b>Chromaticity Coordinate y:</b>	0.3646	
<b>Ambient Temperature (°C):</b>	25.0	
<b>Stabilization Time (Hours):</b>	0:45	
<b>Total Operating Time (Hours):</b>	3:40	

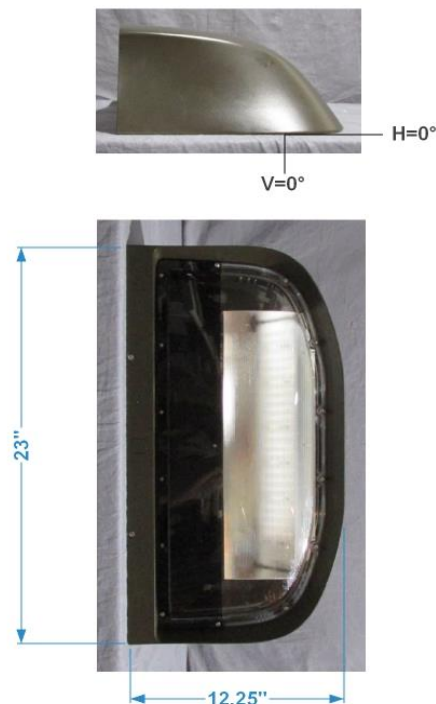
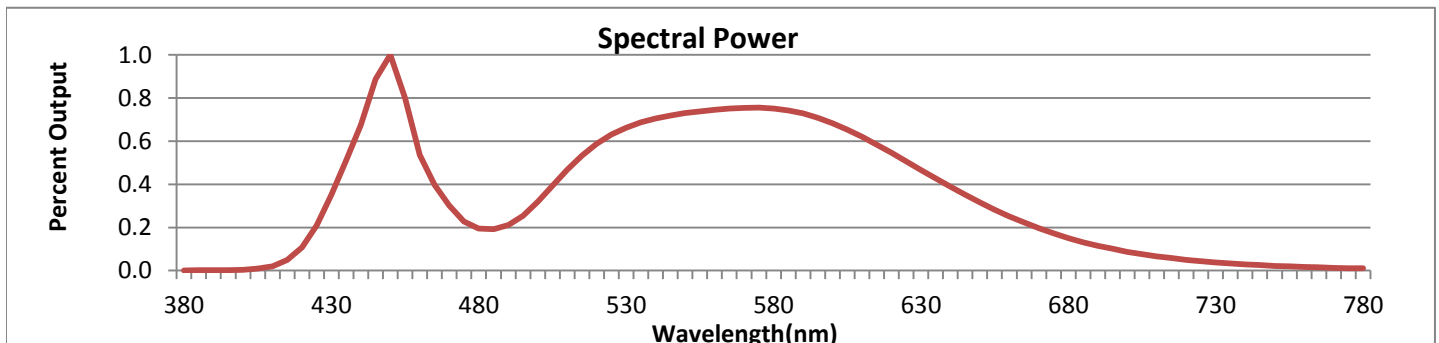


FIG. 1 LUMINAIRE



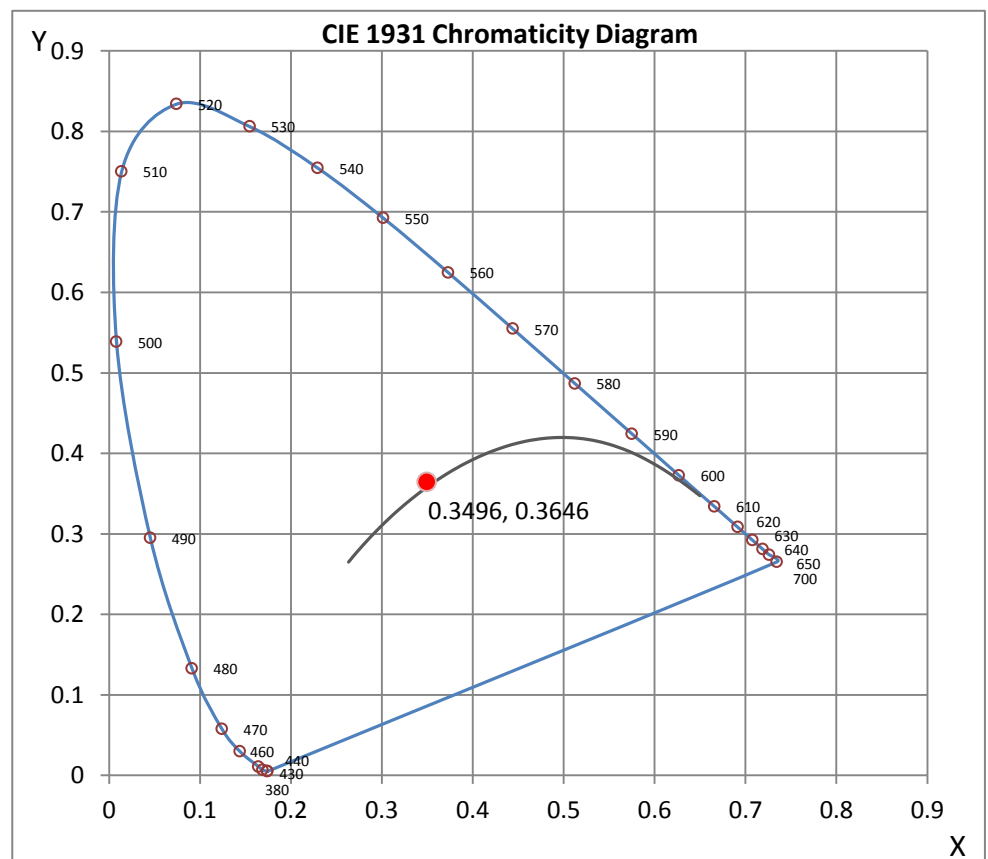
Wavelength	W/m <sup>2</sup> nm	440	0.6754	510	0.4682	580	0.7518	650	0.3163	720	0.0500
380	0.0012	450	1.0000	520	0.5877	590	0.7292	660	0.2518	730	0.0379
390	0.0016	460	0.5362	530	0.6628	600	0.6836	670	0.1958	740	0.0288
400	0.0042	470	0.3013	540	0.7055	610	0.6203	680	0.1510	750	0.0220
410	0.0205	480	0.1954	550	0.7299	620	0.5460	690	0.1147	760	0.0169
420	0.1079	490	0.2105	560	0.7455	630	0.4663	700	0.0872	770	0.0131
430	0.3526	500	0.3195	570	0.7551	640	0.3891	710	0.0661	780	0.0114

**CRI & CCT**

x	0.3496
y	0.3646
u'	0.2095
v'	0.4915
CRI	75.10
CCT	4884
Duv	0.00465

**R Values**

R1	72.21
R2	79.49
R3	84.91
R4	75.38
R5	72.25
R6	71.45
R7	84.37
R8	60.69
R9	-16.89
R10	50.98
R11	71.94
R12	46.76
R13	73.27
R14	91.08



## 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*



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## Photometric Test Report

### IES ROAD REPORT

PHOTOMETRIC FILENAME : L041706606.IES

### DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L041706606  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 5/1/2017  
[MANUFAC] Leotek Electronics USA, LLC  
[LUMCAT] ES2-130H-MV-CW-FT-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, 181.68W  
[TEST PROCEDURE] IESNA:LM-79-08

### CHARACTERISTICS

IES Classification	Type IV
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	19150
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	105
Total Luminaire Watts	181.68
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	11120
Maximum Candela Angle	10H 60V
Maximum Candela (<90 Degrees Vertical)	11120
Maximum Candela Angle (<90 Degrees Vertical)	10H 60V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	2656 (13.9% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L041706606.IES**

**LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	991.1	N.A.	5.2
FM - Front-Medium (30-60)	4942.3	N.A.	25.8
FH - Front-High (60-80)	4508.8	N.A.	23.5
FVH - Front-Very High (80-90)	303.7	N.A.	1.6
BL - Back-Low (0-30)	2012.3	N.A.	10.5
BM - Back-Medium (30-60)	5309.0	N.A.	27.7
BH - Back-High (60-80)	1050.2	N.A.	5.5
BVH - Back-Very High (80-90)	32.3	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	19149.7	N.A.	100.0
BUG Rating	B4-U0-G3		

**ZONAL LUMEN SUMMARY**

Zone	%
0-20	6.8
0-30	15.7
0-40	28.9
0-60	69.2
0-80	98.2
0-90	100
10-90	98.3
20-40	22.1
20-50	40.1
40-70	59.6
60-80	29
70-80	9.7
80-90	1.8
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 : L041706606.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>	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514
<b>0.5</b>	3327	3333	3345	3355	3369	3383	3399	3411	3422	3429
<b>1.0</b>	3258	3261	3272	3285	3300	3317	3331	3351	3369	3373
<b>1.5</b>	3209	3213	3222	3234	3243	3249	3278	3294	3316	3334
<b>2.0</b>	3144	3144	3177	3192	3208	3225	3234	3246	3264	3287
<b>2.5</b>	3126	3131	3141	3148	3156	3173	3197	3216	3230	3244
<b>3.0</b>	3114	3118	3128	3137	3142	3149	3155	3166	3186	3203
<b>3.5</b>	3142	3140	3142	3145	3151	3152	3149	3147	3157	3171
<b>4.0</b>	3112	3115	3127	3140	3150	3151	3147	3146	3144	3141
<b>4.5</b>	3062	3068	3086	3102	3116	3133	3148	3150	3141	3131
<b>5.0</b>	3007	3013	3023	3042	3062	3092	3111	3137	3147	3131
<b>5.5</b>	2973	2978	2989	2997	3004	3032	3060	3090	3121	3131
<b>6.0</b>	2918	2927	2944	2962	2977	2994	3007	3038	3075	3102
<b>6.5</b>	2820	2832	2852	2877	2903	2944	2978	2999	3040	3078
<b>7.0</b>	2782	2790	2792	2805	2850	2892	2934	2978	2998	3043
<b>7.5</b>	2767	2772	2777	2793	2799	2817	2867	2916	2971	3003
<b>8.0</b>	2689	2714	2731	2751	2774	2783	2794	2852	2913	2962
<b>8.5</b>	2649	2655	2666	2681	2704	2746	2773	2785	2852	2921
<b>9.0</b>	2579	2592	2600	2624	2647	2675	2732	2770	2806	2887
<b>9.5</b>	2525	2539	2549	2566	2590	2631	2675	2733	2778	2832
<b>10.0</b>	2493	2501	2508	2525	2539	2569	2616	2670	2744	2774
<b>10.5</b>	2430	2449	2460	2474	2487	2519	2570	2638	2726	2766
<b>11.0</b>	2396	2404	2420	2432	2447	2473	2519	2572	2655	2729
<b>11.5</b>	2373	2381	2389	2398	2408	2434	2474	2528	2599	2681
<b>12.0</b>	2323	2336	2341	2355	2378	2404	2443	2483	2556	2629
<b>12.5</b>	2283	2292	2299	2308	2335	2371	2417	2469	2535	2611
<b>13.0</b>	2240	2253	2260	2271	2294	2322	2376	2433	2504	2579
<b>13.5</b>	2196	2212	2214	2223	2253	2284	2335	2397	2461	2531
<b>14.0</b>	2182	2191	2177	2181	2204	2250	2295	2367	2427	2501
<b>14.5</b>	2181	2174	2161	2151	2171	2197	2253	2328	2404	2477
<b>15.0</b>	2181	2154	2155	2148	2149	2163	2220	2276	2360	2436
<b>15.5</b>	2186	2169	2166	2122	2113	2134	2184	2247	2323	2411
<b>16.0</b>	2123	2116	2137	2128	2106	2119	2165	2219	2303	2395
<b>16.5</b>	2112	2102	2107	2102	2099	2093	2143	2170	2257	2353
<b>17.0</b>	2083	2063	2070	2066	2087	2103	2100	2145	2220	2305
<b>17.5</b>	2053	2033	2035	2027	2058	2083	2094	2119	2179	2277
<b>18.0</b>	2011	2000	2011	1994	2009	2040	2094	2083	2150	2248
<b>18.5</b>	1967	1963	1970	1962	1973	2006	2056	2082	2122	2215
<b>19.0</b>	1944	1941	1936	1932	1943	1969	2026	2066	2091	2187
<b>19.5</b>	1916	1915	1903	1896	1897	1925	1996	2054	2088	2167
<b>20.0</b>	1908	1894	1887	1878	1870	1902	1959	2023	2090	2163
<b>20.5</b>	1901	1891	1882	1855	1843	1856	1903	1984	2081	2134
<b>21.0</b>	1882	1880	1863	1841	1830	1837	1878	1931	2042	2113
<b>21.5</b>	1874	1870	1848	1827	1815	1816	1840	1919	2019	2116
<b>22.0</b>	1864	1849	1842	1811	1796	1798	1815	1891	1988	2117
<b>22.5</b>	1847	1842	1823	1798	1784	1785	1803	1863	1968	2114
<b>23.0</b>	1853	1839	1811	1793	1775	1766	1783	1832	1932	2106
<b>23.5</b>	1849	1832	1808	1776	1761	1757	1772	1812	1904	2042
<b>24.0</b>	1843	1831	1807	1778	1756	1746	1762	1803	1889	2017
<b>24.5</b>	1840	1830	1806	1777	1757	1736	1750	1783	1871	2000
<b>25.0</b>	1830	1822	1808	1782	1755	1737	1741	1775	1851	1957
<b>25.5</b>	1823	1819	1807	1783	1759	1740	1742	1770	1850	1946
<b>26.0</b>	1817	1813	1805	1788	1763	1743	1738	1766	1836	1926

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

26.5	1819	1812	1806	1790	1774	1749	1744	1761	1817	1895
27.0	1821	1814	1816	1798	1777	1759	1755	1761	1811	1882
27.5	1821	1817	1821	1809	1785	1769	1762	1765	1810	1874
28.0	1828	1823	1829	1823	1801	1775	1765	1768	1788	1844
28.5	1832	1828	1844	1838	1817	1786	1773	1776	1794	1845
29.0	1830	1836	1858	1862	1838	1803	1776	1780	1793	1839
29.5	1838	1844	1868	1881	1861	1821	1783	1783	1791	1821
30.0	1855	1862	1889	1902	1879	1842	1793	1781	1785	1808
30.5	1872	1893	1916	1928	1907	1859	1806	1778	1784	1803
31.0	1944	1946	1959	1975	1937	1883	1816	1774	1781	1795
31.5	2009	2026	2032	2020	1972	1904	1830	1777	1776	1801
32.0	2085	2131	2128	2114	2022	1937	1843	1781	1761	1794
32.5	2169	2253	2216	2243	2098	1971	1859	1773	1749	1787
33.0	2278	2353	2310	2316	2182	2021	1879	1777	1741	1787
33.5	2344	2424	2416	2441	2315	2084	1905	1782	1730	1777
34.0	2464	2509	2519	2539	2397	2181	1936	1780	1723	1763
34.5	2579	2615	2631	2639	2516	2267	1974	1788	1716	1752
35.0	2691	2726	2734	2729	2593	2321	2030	1804	1717	1733
35.5	2790	2824	2834	2815	2689	2462	2126	1828	1714	1720
36.0	2906	2940	2960	2926	2775	2524	2220	1860	1717	1712
36.5	3028	3058	3067	3038	2853	2567	2304	1934	1731	1697
37.0	3157	3165	3169	3137	2971	2674	2374	2012	1763	1692
37.5	3377	3357	3347	3265	3081	2770	2431	2079	1793	1691
38.0	3628	3617	3562	3441	3215	2855	2477	2150	1845	1700
38.5	3773	3755	3732	3602	3356	3005	2616	2266	1917	1704
39.0	3954	3952	3927	3762	3480	3063	2682	2345	1977	1733
39.5	4138	4148	4125	3961	3661	3237	2798	2439	2083	1766
40.0	4353	4362	4333	4162	3843	3400	2918	2512	2130	1808
40.5	4593	4595	4558	4368	4026	3550	3018	2612	2259	1872
41.0	4839	4833	4776	4589	4218	3783	3216	2772	2362	1940
41.5	5134	5103	5021	4831	4427	3970	3341	2861	2434	1992
42.0	5359	5346	5276	5054	4651	4116	3536	3016	2540	2091
42.5	5591	5586	5507	5295	4889	4379	3780	3231	2697	2197
43.0	5900	5872	5781	5566	5136	4614	3994	3344	2738	2249
43.5	6254	6228	6106	5847	5383	4784	4156	3503	2897	2344
44.0	6639	6591	6424	6130	5624	5078	4436	3748	3098	2438
44.5	6995	6944	6734	6430	5902	5341	4688	3936	3165	2513
45.0	7440	7404	7183	6792	6231	5568	4893	4155	3389	2673
45.5	7898	7878	7658	7223	6574	5915	5194	4447	3629	2789
46.0	8227	8220	8030	7664	6975	6265	5508	4668	3797	2891
46.5	8547	8545	8437	8139	7460	6572	5728	4900	3994	3089
47.0	8699	8715	8624	8480	7922	7120	6177	5181	4203	3163
47.5	8812	8832	8752	8665	8276	7529	6540	5529	4458	3338
48.0	9034	9043	8922	8793	8505	7940	6964	5887	4726	3650
48.5	9293	9298	9146	8954	8681	8277	7420	6175	4845	3719
49.0	9509	9528	9428	9178	8854	8501	7748	6543	5196	4005
49.5	9619	9652	9604	9428	9060	8723	8162	7036	5588	4220
50.0	9680	9715	9690	9604	9288	8919	8373	7321	5827	4357
50.5	9794	9823	9785	9692	9482	9088	8576	7650	6178	4679
51.0	9956	9974	9913	9772	9606	9321	8817	8028	6678	4916
51.5	10078	10125	10067	9894	9700	9496	8990	8219	6960	5103
52.0	10223	10274	10216	10059	9818	9607	9150	8429	7255	5520
52.5	10335	10389	10344	10199	9960	9732	9335	8661	7603	5801
53.0	10434	10489	10444	10307	10114	9846	9420	8763	7737	5966
53.5	10516	10568	10525	10400	10252	9966	9557	8926	7960	6412
54.0	10627	10660	10628	10491	10373	10135	9703	9120	8217	6660



**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L041706606.IES**

**CANDELA TABULATION - (Cont.)**

54.5	10764	10807	10751	10581	10461	10269	9802	9187	8261	6749
55.0	10857	10905	10857	10702	10551	10369	9950	9333	8402	7095
55.5	10954	10998	10973	10836	10672	10471	10071	9453	8528	7143
56.0	11009	11073	11061	10921	10789	10548	10179	9585	8633	7346
56.5	11028	11083	11110	11015	10920	10676	10275	9706	8755	7447
57.0	11023	11086	11114	11037	10997	10796	10347	9803	8884	7449
57.5	11013	11063	11092	11046	11026	10868	10453	9865	8960	7600
58.0	11023	11057	11076	11029	11060	10942	10590	9977	9123	7676
58.5	11021	11074	11070	11002	11065	10984	10630	9990	9092	7739
59.0	11009	11068	11103	10985	11049	10988	10681	10056	9136	7819
59.5	10986	11049	11099	10986	11028	11007	10751	10170	9258	7871
60.0	10954	11007	11120	10996	11041	10982	10747	10150	9204	7907
60.5	10893	10926	10981	10986	11039	10972	10761	10180	9234	7941
61.0	10796	10810	10852	10866	11018	10979	10798	10244	9259	7941
61.5	10552	10614	10675	10718	10941	10965	10760	10198	9245	7933
62.0	10343	10421	10508	10576	10818	10913	10785	10193	9123	7820
62.5	10011	10078	10275	10411	10684	10823	10753	10172	9192	7905
63.0	9671	9739	9943	10181	10544	10720	10680	10171	9153	7879
63.5	9337	9418	9581	9834	10317	10627	10554	10137	9109	7844
64.0	9057	9137	9299	9522	10017	10450	10454	10108	9156	7797
64.5	8726	8789	8946	9174	9756	10220	10323	9944	8989	7683
65.0	8366	8435	8623	8858	9400	9918	10201	9857	9046	7620
65.5	8130	8205	8347	8533	9034	9569	9927	9751	8866	7548
66.0	7861	7918	8055	8289	8782	9373	9731	9596	8843	7587
66.5	7608	7670	7806	7993	8499	9036	9424	9472	8753	7477
67.0	7366	7421	7534	7719	8248	8774	9163	9212	8612	7405
67.5	7147	7203	7312	7474	7940	8456	8875	8943	8393	7212
68.0	6947	7004	7097	7221	7648	8174	8556	8677	8172	7182
68.5	6753	6799	6882	7016	7430	7910	8273	8395	7938	7069
69.0	6568	6595	6675	6802	7198	7636	8021	8122	7700	6839
69.5	6420	6437	6482	6585	6962	7377	7700	7832	7436	6705
70.0	6246	6262	6298	6406	6742	7137	7427	7528	7203	6533
70.5	6039	6044	6088	6199	6534	6902	7166	7236	6895	6270
71.0	5837	5848	5893	5969	6325	6653	6887	6960	6644	6046
71.5	5660	5668	5698	5790	6112	6428	6631	6642	6346	5795
72.0	5479	5490	5518	5599	5892	6188	6366	6349	6039	5519
72.5	5273	5281	5317	5399	5655	5966	6129	6072	5788	5336
73.0	5077	5083	5109	5216	5474	5747	5864	5813	5510	5125
73.5	4847	4852	4884	4999	5265	5531	5640	5559	5232	4867
74.0	4630	4641	4660	4762	5032	5291	5395	5289	4950	4598
74.5	4447	4457	4471	4559	4819	5060	5146	5030	4675	4238
75.0	4220	4223	4246	4363	4612	4841	4926	4780	4415	3910
75.5	4007	4006	4021	4126	4387	4628	4677	4547	4220	3813
76.0	3803	3799	3815	3897	4151	4394	4447	4276	3876	3653
76.5	3588	3586	3605	3695	3924	4146	4222	3917	3721	3429
77.0	3371	3372	3382	3472	3707	3921	3983	3788	3487	3207
77.5	3159	3159	3175	3259	3485	3695	3719	3583	3259	2972
78.0	2945	2948	2966	3046	3277	3478	3545	3385	3068	2784
78.5	2743	2742	2756	2831	3084	3254	3311	3161	2826	2580
79.0	2560	2554	2563	2633	2843	3028	3087	2913	2600	2360
79.5	2357	2353	2367	2447	2639	2804	2869	2737	2427	2195
80.0	2171	2167	2177	2238	2459	2600	2656	2533	2262	2015
80.5	1992	1990	2001	2070	2249	2391	2445	2305	2035	1818
81.0	1817	1812	1823	1890	2057	2196	2239	2111	1870	1665
81.5	1648	1644	1652	1713	1870	1997	2045	1940	1716	1501
82.0	1497	1492	1498	1547	1691	1808	1847	1734	1511	1329

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**CANDELA TABULATION - (Cont.)**

82.5	1335	1328	1334	1387	1517	1626	1666	1566	1371	1196
83.0	1176	1171	1184	1226	1343	1449	1490	1394	1215	1041
83.5	1046	1042	1046	1080	1184	1273	1304	1219	1059	906
84.0	910	906	908	940	1031	1111	1139	1051	907	779
84.5	781	778	779	804	883	950	972	893	757	644
85.0	657	653	654	677	739	799	810	740	630	533
85.5	542	538	537	554	606	649	657	604	512	426
86.0	432	429	429	439	479	512	515	467	387	320
86.5	332	329	327	335	364	386	386	349	289	236
87.0	239	237	235	238	259	274	273	249	204	161
87.5	161	158	157	158	169	176	176	155	123	97
88.0	91	91	90	90	93	95	91	80	61	47
88.5	38	38	38	38	39	39	36	29	21	15
89.0	8	8	8	8	8	8	8	7	6	5
89.5	3	3	3	3	4	4	4	5	5	5
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	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514
0.5	3433	3433	3433	3438	3456	3472	3496	3524	3540	3544
1.0	3408	3419	3424	3424	3437	3456	3481	3514	3534	3537
1.5	3358	3380	3403	3416	3419	3433	3462	3497	3520	3524
2.0	3308	3333	3366	3393	3411	3421	3444	3482	3509	3509
2.5	3261	3287	3322	3361	3391	3409	3425	3465	3499	3501
3.0	3216	3226	3266	3306	3361	3389	3399	3444	3486	3487
3.5	3191	3193	3217	3257	3311	3371	3377	3421	3470	3472
4.0	3157	3179	3200	3239	3291	3343	3365	3380	3450	3465
4.5	3127	3150	3173	3201	3261	3330	3355	3379	3455	3451
5.0	3119	3116	3152	3175	3234	3306	3346	3365	3449	3443
5.5	3118	3105	3122	3157	3199	3276	3337	3358	3442	3433
6.0	3116	3099	3100	3138	3173	3257	3331	3352	3433	3431
6.5	3104	3088	3084	3116	3151	3217	3296	3325	3404	3426
7.0	3076	3084	3069	3083	3122	3182	3266	3314	3387	3416
7.5	3043	3074	3066	3063	3104	3153	3245	3307	3395	3414
8.0	2994	3038	3062	3051	3079	3130	3244	3289	3385	3417
8.5	2959	3018	3054	3037	3065	3124	3231	3277	3368	3409
9.0	2939	2985	3029	3034	3037	3102	3200	3264	3340	3394
9.5	2907	2945	3007	3027	3019	3083	3168	3256	3336	3386
10.0	2861	2915	2969	3017	3009	3063	3147	3244	3318	3397
10.5	2826	2901	2943	3003	2999	3045	3116	3229	3287	3376
11.0	2762	2885	2931	2994	2992	3034	3100	3217	3291	3370
11.5	2744	2797	2900	2961	2985	3016	3088	3201	3288	3395
12.0	2718	2763	2878	2931	2981	2998	3070	3184	3277	3380
12.5	2700	2739	2852	2914	2969	2966	3017	3157	3255	3367
13.0	2668	2734	2832	2895	2962	2946	2997	3132	3216	3324
13.5	2620	2718	2783	2875	2941	2935	2983	3123	3217	3324
14.0	2586	2690	2745	2856	2925	2922	2966	3105	3189	3309
14.5	2561	2657	2718	2832	2897	2906	2948	3066	3159	3285
15.0	2513	2615	2704	2804	2871	2896	2931	3062	3159	3263
15.5	2487	2574	2686	2769	2858	2886	2917	3038	3131	3241
16.0	2480	2559	2674	2740	2839	2874	2889	2988	3098	3217
16.5	2455	2537	2646	2697	2815	2857	2854	2972	3078	3195
17.0	2414	2496	2600	2681	2799	2841	2840	2959	3049	3168
17.5	2387	2477	2560	2677	2784	2827	2819	2932	3032	3138

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**CANDELA TABULATION - (Cont.)**

18.0	2368	2464	2549	2670	2762	2814	2807	2932	3010	3113
18.5	2329	2435	2532	2648	2742	2802	2784	2879	2970	3094
19.0	2301	2414	2514	2636	2709	2783	2770	2850	2962	3059
19.5	2282	2402	2508	2620	2677	2759	2754	2830	2930	3029
20.0	2267	2390	2486	2587	2653	2743	2743	2789	2897	3014
20.5	2233	2363	2474	2577	2650	2735	2725	2784	2898	2983
21.0	2195	2331	2448	2549	2636	2720	2711	2778	2884	2958
21.5	2187	2314	2433	2524	2630	2710	2699	2731	2837	2934
22.0	2182	2301	2424	2518	2615	2697	2694	2711	2820	2909
22.5	2170	2271	2407	2514	2610	2682	2671	2689	2789	2884
23.0	2176	2262	2398	2510	2600	2664	2668	2668	2766	2858
23.5	2157	2239	2381	2491	2582	2643	2663	2657	2751	2840
24.0	2157	2218	2351	2493	2578	2641	2642	2630	2716	2814
24.5	2156	2219	2354	2493	2563	2622	2637	2613	2699	2783
25.0	2154	2222	2348	2482	2533	2609	2632	2595	2672	2761
25.5	2115	2216	2329	2480	2525	2600	2628	2577	2637	2732
26.0	2089	2233	2321	2474	2528	2592	2625	2562	2616	2713
26.5	2069	2236	2313	2466	2536	2590	2617	2550	2611	2711
27.0	2026	2235	2304	2475	2546	2591	2602	2533	2574	2669
27.5	2017	2229	2308	2457	2560	2591	2599	2519	2562	2665
28.0	1988	2207	2321	2460	2566	2594	2588	2505	2540	2642
28.5	1971	2201	2324	2456	2572	2594	2585	2491	2513	2606
29.0	1958	2181	2329	2455	2567	2586	2579	2474	2496	2593
29.5	1943	2157	2342	2460	2576	2585	2566	2457	2471	2590
30.0	1919	2103	2343	2440	2576	2581	2556	2440	2447	2546
30.5	1915	2083	2344	2452	2561	2565	2548	2424	2434	2539
31.0	1889	2052	2354	2457	2574	2561	2537	2393	2400	2527
31.5	1896	2046	2349	2453	2562	2558	2524	2385	2373	2475
32.0	1870	2025	2300	2454	2560	2551	2498	2342	2357	2479
32.5	1855	1984	2259	2448	2553	2534	2480	2328	2322	2457
33.0	1837	1973	2234	2441	2531	2534	2462	2310	2301	2440
33.5	1830	1943	2201	2444	2512	2516	2419	2272	2288	2426
34.0	1815	1922	2171	2416	2491	2485	2397	2244	2250	2400
34.5	1818	1918	2136	2421	2448	2466	2368	2230	2221	2385
35.0	1804	1893	2092	2393	2411	2433	2324	2193	2206	2368
35.5	1780	1868	2054	2365	2381	2382	2285	2155	2168	2355
36.0	1763	1857	2023	2332	2342	2341	2239	2132	2146	2332
36.5	1758	1829	1977	2267	2307	2284	2188	2097	2140	2332
37.0	1729	1802	1937	2204	2261	2232	2141	2062	2093	2302
37.5	1703	1793	1893	2154	2223	2168	2087	2038	2072	2293
38.0	1688	1775	1880	2132	2175	2114	2036	2005	2062	2293
38.5	1670	1753	1839	2047	2129	2061	1985	1969	2042	2268
39.0	1651	1711	1797	1980	2083	2000	1942	1943	2017	2262
39.5	1649	1679	1777	1934	2026	1939	1897	1914	2017	2277
40.0	1641	1655	1728	1869	1969	1885	1850	1876	2001	2244
40.5	1655	1620	1701	1810	1927	1824	1808	1856	1972	2218
41.0	1658	1589	1663	1750	1896	1775	1768	1840	1982	2245
41.5	1671	1569	1624	1703	1835	1723	1733	1803	1950	2221
42.0	1715	1564	1584	1630	1767	1680	1703	1789	1941	2243
42.5	1753	1558	1546	1584	1712	1645	1670	1782	1955	2247
43.0	1813	1564	1513	1535	1663	1603	1637	1743	1923	2216
43.5	1882	1576	1483	1492	1600	1566	1611	1734	1908	2239
44.0	1918	1584	1461	1452	1544	1546	1588	1733	1924	2246
44.5	1998	1610	1445	1419	1510	1524	1561	1694	1901	2221
45.0	2099	1681	1426	1385	1468	1495	1547	1695	1906	2264
45.5	2138	1699	1426	1353	1425	1469	1536	1678	1899	2238

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**CANDELA TABULATION - (Cont.)**

46.0	2226	1800	1459	1331	1386	1469	1507	1667	1871	2210
46.5	2312	1812	1443	1310	1353	1438	1489	1672	1893	2271
47.0	2387	1863	1467	1299	1321	1405	1480	1640	1881	2234
47.5	2487	1957	1524	1285	1295	1404	1452	1631	1856	2200
48.0	2641	1996	1508	1271	1268	1399	1438	1645	1884	2261
48.5	2728	2068	1593	1293	1245	1364	1434	1614	1873	2231
49.0	2932	2156	1620	1290	1223	1357	1403	1599	1836	2184
49.5	3005	2193	1664	1301	1203	1340	1390	1613	1863	2243
50.0	3170	2343	1746	1299	1193	1327	1377	1560	1832	2185
50.5	3407	2439	1770	1336	1176	1304	1358	1560	1819	2205
51.0	3501	2480	1830	1369	1166	1272	1338	1564	1836	2204
51.5	3802	2662	1926	1369	1159	1261	1325	1530	1803	2163
52.0	3977	2772	1938	1424	1153	1231	1309	1508	1785	2145
52.5	4049	2814	2005	1470	1160	1183	1285	1502	1792	2164
53.0	4385	3034	2127	1482	1153	1171	1271	1461	1744	2117
53.5	4633	3179	2149	1555	1154	1152	1254	1440	1726	2101
54.0	4726	3220	2221	1597	1181	1117	1227	1432	1719	2101
54.5	5081	3475	2360	1603	1182	1104	1202	1380	1668	2049
55.0	5232	3577	2337	1670	1199	1086	1180	1370	1668	2061
55.5	5438	3754	2494	1706	1223	1074	1152	1338	1637	2037
56.0	5727	3998	2649	1795	1239	1058	1126	1286	1578	1974
56.5	5762	4040	2587	1794	1259	1046	1101	1274	1571	1982
57.0	5926	4204	2777	1827	1284	1039	1080	1240	1540	1953
57.5	6119	4479	2985	1924	1306	1028	1053	1189	1478	1889
58.0	6080	4429	2952	1943	1356	1019	1032	1173	1464	1888
58.5	6271	4674	3156	1928	1339	1013	1009	1129	1409	1852
59.0	6328	4772	3149	2032	1359	1004	984	1099	1379	1803
59.5	6265	4203	3254	2085	1418	1014	977	1065	1362	1798
60.0	6414	4281	3336	2136	1433	1013	970	1029	1324	1720
60.5	6352	4255	3411	2176	1441	1003	958	1012	1257	1678
61.0	6499	4305	3474	2220	1442	976	929	964	1216	1667
61.5	6513	4441	3632	2187	1404	968	920	929	1170	1577
62.0	6414	4357	3571	2306	1457	982	845	894	1108	1565
62.5	6531	4391	3691	2331	1408	971	828	863	1089	1478
63.0	6513	4387	3603	2358	1456	987	810	832	1055	1439
63.5	6372	4398	3607	2379	1430	969	789	804	1015	1385
64.0	6391	4333	3549	2353	1430	960	772	772	972	1360
64.5	6339	4412	3642	2450	1478	977	722	733	934	1276
65.0	6289	4283	3613	2357	1416	940	696	704	875	1191
65.5	6227	4338	3584	2424	1405	929	675	682	853	1163
66.0	6155	4395	3544	2401	1401	948	663	648	799	1108
66.5	6128	4245	3419	2309	1390	961	639	627	779	1059
67.0	6045	4237	3413	2311	1405	916	630	595	756	1032
67.5	5869	4162	3364	2276	1386	946	619	573	699	957
68.0	5885	4176	3303	2235	1319	903	594	548	665	922
68.5	5807	4197	3332	2189	1293	890	579	526	633	852
69.0	5606	4118	3259	2078	1274	903	575	502	601	806
69.5	5591	4116	3111	2093	1290	892	549	482	571	779
70.0	5383	4028	3035	2040	1264	904	546	463	552	738
70.5	5281	3941	2961	1982	1224	871	532	442	514	679
71.0	5220	3919	2878	1923	1193	857	507	422	487	654
71.5	4791	3899	2879	1862	1110	836	491	405	461	601
72.0	4279	3794	2788	1801	1074	836	488	389	433	569
72.5	4215	3758	2626	1733	1052	824	467	370	416	544
73.0	4075	3581	2490	1691	1048	821	462	352	392	497
73.5	3952	3418	2406	1570	1009	688	436	338	364	464

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**CANDELA TABULATION - (Cont.)**

74.0	3894	3271	2381	1552	964	662	410	319	347	431
74.5	3806	3128	2282	1431	952	570	403	305	321	393
75.0	3639	2972	2171	1410	937	545	386	291	305	371
75.5	3425	2820	1997	1295	895	520	369	272	285	348
76.0	3232	2652	1921	1254	893	507	362	256	265	316
76.5	3074	2546	1811	1186	853	464	331	243	245	291
77.0	2887	2396	1753	1114	839	438	313	229	228	266
77.5	2669	2207	1596	1010	815	424	304	218	210	244
78.0	2507	2067	1492	972	598	400	280	201	196	226
78.5	2320	1961	1386	905	560	366	263	187	179	206
79.0	2115	1784	1290	838	520	350	253	177	163	187
79.5	1962	1674	1195	773	480	317	229	161	150	170
80.0	1791	1504	1091	707	440	300	212	148	137	153
80.5	1611	1368	997	643	400	275	200	138	123	137
81.0	1466	1255	902	582	351	245	178	122	110	123
81.5	1317	1105	805	520	329	227	162	110	98	107
82.0	1166	991	724	467	283	198	145	98	86	93
82.5	1027	869	618	398	250	176	128	84	75	82
83.0	901	760	554	357	225	156	112	75	64	70
83.5	781	657	478	308	187	132	96	64	55	58
84.0	661	554	391	251	159	113	82	53	46	50
84.5	550	458	330	212	131	95	68	45	37	40
85.0	452	375	263	169	105	75	54	35	30	33
85.5	352	287	203	129	84	59	42	27	24	26
86.0	266	214	149	95	59	43	31	21	18	20
86.5	193	153	103	64	40	29	20	14	13	15
87.0	128	97	64	39	25	17	13	9	9	10
87.5	76	56	37	22	13	9	8	6	6	7
88.0	36	26	18	11	7	5	5	4	4	4
88.5	12	8	8	6	4	4	4	3	3	3
89.0	5	5	5	4	3	3	3	2	2	2
89.5	5	5	5	4	3	3	2	2	2	2
90.0	0	0	0	0	0	0	0	0	0	0

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

	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0.0	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514
0.5	3537	3530	3536	3550	3583	3611	3637	3658	3666	3666
1.0	3526	3522	3548	3591	3633	3652	3657	3652	3639	3622
1.5	3514	3529	3581	3631	3650	3637	3613	3601	3616	3636
2.0	3508	3547	3613	3647	3620	3593	3599	3639	3682	3706
2.5	3517	3579	3636	3623	3592	3602	3653	3692	3712	3718
3.0	3516	3602	3619	3591	3597	3648	3689	3704	3714	3737
3.5	3521	3602	3590	3580	3632	3676	3691	3711	3754	3802
4.0	3529	3598	3566	3602	3655	3673	3706	3769	3834	3870
4.5	3528	3601	3556	3617	3659	3678	3753	3821	3863	3909
5.0	3547	3567	3560	3643	3652	3702	3794	3841	3898	3950
5.5	3549	3540	3580	3645	3662	3746	3814	3892	3940	3984
6.0	3552	3521	3585	3633	3675	3772	3838	3909	3963	4035
6.5	3525	3518	3593	3628	3728	3799	3885	3949	4038	4137
7.0	3513	3498	3598	3652	3762	3834	3913	4017	4130	4181
7.5	3518	3507	3593	3684	3772	3874	3961	4093	4158	4224
8.0	3496	3526	3591	3705	3782	3877	3987	4094	4169	4249
8.5	3470	3526	3579	3702	3791	3877	4034	4118	4216	4284
9.0	3453	3519	3596	3712	3815	3925	4077	4170	4251	4378

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**CANDELA TABULATION - (Cont.)**

9.5	3430	3515	3600	3722	3828	3992	4099	4198	4301	4489
10.0	3397	3511	3616	3740	3844	4013	4133	4233	4406	4522
10.5	3387	3497	3636	3759	3899	4041	4172	4325	4487	4503
11.0	3378	3495	3619	3762	3915	4073	4189	4374	4480	4496
11.5	3396	3494	3629	3767	3944	4068	4219	4433	4469	4485
12.0	3400	3491	3655	3788	3956	4083	4303	4443	4458	4487
12.5	3394	3489	3658	3815	3985	4113	4367	4424	4445	4580
13.0	3367	3483	3671	3841	3995	4174	4385	4409	4490	4695
13.5	3375	3483	3661	3853	3991	4242	4382	4395	4568	4731
14.0	3363	3471	3655	3861	4009	4283	4359	4397	4646	4759
14.5	3359	3480	3655	3862	4027	4295	4335	4492	4699	4760
15.0	3351	3469	3655	3866	4056	4287	4324	4522	4700	4768
15.5	3327	3461	3650	3875	4096	4276	4326	4596	4711	4814
16.0	3307	3439	3648	3861	4128	4281	4461	4656	4738	4900
16.5	3295	3436	3673	3898	4179	4264	4518	4651	4771	4942
17.0	3268	3437	3686	3914	4167	4247	4533	4651	4844	4936
17.5	3257	3430	3668	3904	4150	4255	4568	4668	4873	4940
18.0	3237	3409	3656	3930	4159	4293	4571	4697	4888	4995
18.5	3203	3419	3661	3953	4141	4370	4561	4777	4895	5061
19.0	3175	3398	3646	3979	4125	4427	4575	4813	4916	5110
19.5	3168	3384	3647	3954	4116	4437	4603	4829	4981	5189
20.0	3141	3401	3650	3962	4110	4450	4644	4837	5050	5253
20.5	3120	3381	3627	3943	4143	4459	4700	4865	5086	5298
21.0	3122	3380	3635	3925	4197	4444	4709	4882	5136	5386
21.5	3089	3396	3669	3944	4231	4455	4735	4959	5228	5470
22.0	3062	3360	3638	3928	4298	4516	4759	5030	5314	5494
22.5	3062	3341	3646	3911	4305	4523	4763	5053	5381	5535
23.0	3030	3324	3660	3902	4293	4552	4793	5148	5425	5613
23.5	3008	3305	3661	3892	4285	4591	4835	5211	5448	5657
24.0	3022	3316	3657	3897	4278	4605	4881	5271	5487	5726
24.5	2978	3278	3636	3893	4283	4617	4928	5314	5548	5840
25.0	2953	3262	3631	3915	4309	4653	5010	5358	5613	5928
25.5	2973	3290	3624	3961	4348	4683	5078	5398	5698	5982
26.0	2944	3262	3619	3997	4381	4708	5130	5427	5764	6026
26.5	2929	3255	3607	4020	4378	4718	5136	5435	5828	6117
27.0	2895	3257	3619	4020	4415	4767	5190	5511	5888	6250
27.5	2881	3214	3592	3994	4464	4880	5246	5596	5922	6328
28.0	2900	3243	3611	3997	4447	4879	5246	5638	5998	6420
28.5	2876	3229	3601	4028	4459	4933	5276	5742	6130	6527
29.0	2836	3186	3568	4043	4512	5015	5365	5775	6223	6584
29.5	2853	3218	3609	4016	4497	5007	5385	5788	6314	6693
30.0	2822	3215	3611	4056	4512	5041	5441	5867	6408	6822
30.5	2803	3185	3586	4082	4568	5083	5541	5944	6438	6905
31.0	2803	3205	3635	4098	4613	5082	5558	6018	6523	7018
31.5	2761	3197	3636	4109	4640	5104	5588	6139	6665	7122
32.0	2759	3170	3616	4131	4672	5176	5654	6209	6716	7179
32.5	2754	3197	3665	4163	4738	5202	5692	6241	6770	7259
33.0	2747	3156	3625	4134	4712	5248	5783	6322	6883	7296
33.5	2733	3146	3623	4171	4757	5249	5796	6346	6904	7289
34.0	2717	3159	3653	4176	4768	5294	5872	6434	7004	7276
34.5	2704	3128	3620	4158	4752	5329	5987	6587	7068	7352
35.0	2697	3127	3620	4231	4826	5368	5971	6579	7038	7390
35.5	2696	3159	3638	4224	4805	5376	6050	6680	7049	7418
36.0	2675	3106	3647	4244	4818	5448	6104	6720	7037	7416
36.5	2697	3135	3653	4260	4838	5446	6107	6724	7049	7430
37.0	2662	3100	3654	4276	4855	5488	6209	6759	7127	7502

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**CANDELA TABULATION - (Cont.)**

37.5	2660	3095	3668	4287	4871	5544	6251	6740	7129	7509
38.0	2673	3128	3622	4304	4896	5575	6251	6694	7111	7488
38.5	2639	3091	3631	4313	4904	5625	6316	6731	7170	7483
39.0	2642	3133	3697	4308	4894	5587	6306	6745	7233	7473
39.5	2675	3139	3663	4313	4923	5625	6270	6729	7171	7408
40.0	2635	3100	3665	4310	4942	5715	6273	6764	7190	7337
40.5	2640	3145	3722	4312	4950	5675	6214	6767	7196	7288
41.0	2659	3121	3701	4314	5026	5689	6198	6728	7142	7243
41.5	2659	3132	3706	4298	4947	5699	6224	6772	7082	7195
42.0	2666	3144	3704	4283	5012	5684	6225	6738	7050	7147
42.5	2679	3148	3711	4323	5066	5660	6205	6706	6989	7070
43.0	2677	3153	3710	4279	4970	5644	6178	6687	6923	6990
43.5	2679	3168	3719	4336	5032	5610	6168	6601	6862	6901
44.0	2702	3185	3736	4351	5069	5593	6170	6577	6811	6829
44.5	2708	3191	3766	4324	4984	5545	6092	6524	6740	6754
45.0	2736	3181	3724	4325	5011	5528	6059	6446	6648	6697
45.5	2708	3188	3724	4331	4941	5536	6054	6385	6558	6617
46.0	2715	3237	3761	4328	4914	5458	5970	6323	6491	6515
46.5	2718	3203	3722	4330	4937	5460	5921	6233	6407	6430
47.0	2709	3199	3718	4327	4872	5425	5891	6192	6331	6307
47.5	2707	3242	3753	4309	4832	5342	5807	6114	6251	6152
48.0	2711	3206	3713	4287	4822	5337	5744	6028	6168	6051
48.5	2707	3202	3708	4267	4754	5301	5692	5966	6063	5898
49.0	2700	3235	3738	4252	4719	5212	5586	5887	5922	5697
49.5	2696	3188	3691	4234	4719	5181	5517	5787	5808	5580
50.0	2696	3192	3700	4213	4629	5116	5472	5709	5672	5438
50.5	2652	3177	3685	4154	4600	5028	5382	5589	5487	5275
51.0	2677	3165	3668	4159	4583	4998	5317	5473	5366	5158
51.5	2661	3148	3641	4095	4483	4900	5210	5364	5216	5013
52.0	2610	3119	3608	4063	4463	4821	5106	5225	5034	4848
52.5	2621	3099	3582	4047	4445	4747	5007	5078	4899	4713
53.0	2603	3079	3562	3984	4329	4637	4891	4933	4771	4577
53.5	2550	3059	3516	3957	4312	4560	4798	4785	4647	4452
54.0	2548	3018	3495	3917	4214	4467	4676	4625	4516	4317
54.5	2520	3029	3493	3861	4141	4353	4551	4478	4375	4149
55.0	2498	2962	3424	3788	4078	4286	4430	4353	4268	4029
55.5	2472	2924	3387	3756	3979	4187	4298	4226	4142	3888
56.0	2447	2918	3375	3689	3892	4072	4153	4101	3981	3697
56.5	2416	2850	3297	3598	3811	3978	4020	3977	3855	3571
57.0	2389	2811	3251	3545	3715	3880	3890	3863	3731	3449
57.5	2366	2801	3221	3470	3622	3767	3772	3746	3579	3306
58.0	2329	2725	3135	3378	3548	3654	3641	3600	3448	3193
58.5	2292	2679	3068	3312	3450	3540	3527	3472	3319	3071
59.0	2246	2655	3015	3228	3358	3425	3415	3352	3183	2939
59.5	2232	2607	2943	3157	3281	3320	3303	3226	3066	2836
60.0	2158	2524	2871	3070	3191	3203	3185	3125	2964	2739
60.5	2108	2466	2799	2984	3105	3108	3076	3023	2857	2602
61.0	2083	2436	2728	2914	3009	2997	2942	2886	2729	2494
61.5	2000	2373	2653	2822	2907	2884	2828	2774	2579	2355
62.0	1971	2309	2581	2737	2800	2783	2725	2661	2476	2269
62.5	1908	2265	2514	2661	2702	2677	2616	2539	2352	2163
63.0	1837	2162	2438	2577	2596	2560	2509	2421	2243	2049
63.5	1780	2093	2347	2482	2499	2444	2399	2302	2135	1965
64.0	1717	2023	2267	2398	2403	2339	2297	2196	2048	1867
64.5	1655	1951	2197	2308	2309	2233	2189	2076	1948	1764
65.0	1615	1904	2119	2213	2205	2131	2083	1954	1839	1683

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**CANDELA TABULATION - (Cont.)**

65.5	1529	1833	2036	2117	2103	2028	1976	1853	1749	1582
66.0	1466	1762	1952	2024	2008	1934	1872	1766	1654	1482
66.5	1402	1671	1856	1928	1905	1837	1775	1682	1577	1411
67.0	1339	1598	1771	1836	1807	1744	1675	1598	1491	1320
67.5	1276	1526	1686	1744	1705	1649	1572	1504	1394	1238
68.0	1224	1459	1609	1653	1619	1564	1482	1419	1304	1168
68.5	1161	1382	1515	1565	1530	1480	1397	1330	1230	1093
69.0	1099	1307	1426	1474	1438	1390	1317	1257	1156	1032
69.5	1036	1231	1351	1392	1355	1314	1245	1185	1095	968
70.0	976	1147	1264	1310	1279	1237	1173	1113	1025	910
70.5	902	1076	1184	1228	1194	1156	1095	1039	956	856
71.0	859	1014	1102	1145	1116	1085	1028	974	897	811
71.5	789	945	1032	1073	1049	1015	962	910	835	754
72.0	744	878	961	1002	981	948	896	851	787	704
72.5	703	821	894	933	916	884	839	797	737	662
73.0	644	756	825	866	853	818	778	740	688	614
73.5	595	699	767	804	797	766	726	692	643	565
74.0	552	652	705	742	741	711	676	642	598	527
74.5	510	602	655	688	688	658	629	594	548	478
75.0	470	551	604	636	637	608	583	552	511	440
75.5	439	511	556	585	589	565	543	514	477	411
76.0	398	466	509	537	543	521	500	472	434	376
76.5	365	428	470	495	501	482	459	435	398	340
77.0	338	398	430	453	460	444	424	400	365	314
77.5	304	361	394	415	421	407	389	365	329	283
78.0	281	329	359	379	383	373	355	336	305	260
78.5	256	300	329	345	350	341	325	307	277	237
79.0	232	272	298	313	318	312	293	277	247	213
79.5	210	246	271	283	287	281	266	251	225	192
80.0	189	221	243	254	258	253	239	226	201	174
80.5	169	198	219	228	232	228	214	203	178	154
81.0	151	177	195	203	206	203	192	182	162	139
81.5	131	155	171	179	183	180	170	160	142	124
82.0	115	138	151	157	161	158	151	141	124	108
82.5	101	119	131	136	140	138	132	125	111	97
83.0	85	101	111	117	121	119	114	108	96	85
83.5	72	87	95	100	103	102	98	92	82	73
84.0	62	73	80	84	87	87	84	80	72	64
84.5	50	60	66	70	73	73	71	67	61	55
85.0	41	49	54	57	60	60	58	55	50	46
85.5	33	39	43	46	48	49	46	44	41	38
86.0	25	30	33	36	38	38	35	34	33	32
86.5	18	22	25	28	29	27	26	26	26	26
87.0	13	15	18	20	20	19	19	20	21	22
87.5	8	10	12	13	13	13	15	17	18	19
88.0	5	6	8	8	10	11	13	14	16	17
88.5	4	4	5	7	8	10	12	14	15	16
89.0	3	4	5	6	8	10	12	14	15	15
89.5	3	4	5	6	8	10	12	14	15	16
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>
<b>0.0</b>	3514	3514	3514	3514	3514	3514	3514
<b>0.5</b>	3659	3648	3640	3632	3626	3616	3600



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**CANDELA TABULATION - (Cont.)**

1.0	3612	3608	3608	3607	3610	3611	3598
1.5	3655	3672	3681	3685	3686	3680	3669
2.0	3712	3710	3710	3707	3706	3700	3684
2.5	3716	3728	3748	3769	3782	3788	3770
3.0	3769	3805	3821	3846	3850	3847	3832
3.5	3841	3869	3880	3882	3892	3896	3887
4.0	3885	3915	3937	3950	3955	3959	3954
4.5	3942	3969	3982	3994	4000	4001	3999
5.0	3975	4000	4039	4083	4115	4130	4133
5.5	4042	4108	4158	4185	4194	4206	4220
6.0	4125	4192	4230	4253	4268	4279	4277
6.5	4192	4228	4267	4293	4313	4336	4333
7.0	4241	4288	4315	4350	4355	4371	4386
7.5	4285	4327	4380	4435	4480	4508	4529
8.0	4318	4422	4510	4559	4584	4596	4612
8.5	4417	4536	4583	4592	4593	4592	4603
9.0	4517	4570	4580	4572	4571	4562	4576
9.5	4552	4557	4565	4547	4540	4545	4559
10.0	4541	4549	4532	4556	4604	4636	4658
10.5	4523	4520	4576	4655	4719	4741	4769
11.0	4506	4593	4715	4780	4811	4809	4822
11.5	4562	4713	4793	4823	4831	4835	4854
12.0	4651	4774	4811	4831	4823	4841	4858
12.5	4745	4800	4827	4825	4836	4869	4902
13.0	4781	4806	4835	4866	4910	4948	4972
13.5	4794	4817	4887	4975	4989	5002	5033
14.0	4796	4877	4978	5002	4986	4988	5003
14.5	4843	4952	4996	4974	4990	5017	5026
15.0	4890	4977	4994	5041	5105	5120	5134
15.5	4970	4969	5050	5129	5167	5205	5239
16.0	4964	5022	5132	5193	5232	5250	5250
16.5	4970	5087	5187	5263	5278	5297	5277
17.0	5034	5153	5264	5307	5355	5395	5389
17.5	5084	5228	5310	5399	5487	5516	5506
18.0	5165	5283	5400	5529	5562	5569	5546
18.5	5244	5358	5519	5578	5590	5612	5595
19.0	5274	5451	5573	5601	5683	5721	5711
19.5	5355	5542	5608	5693	5767	5787	5784
20.0	5471	5568	5702	5787	5838	5858	5862
20.5	5516	5624	5785	5857	5955	6008	6020
21.0	5549	5738	5847	5978	6057	6124	6134
21.5	5629	5793	5942	6063	6138	6177	6180
22.0	5685	5871	6038	6160	6222	6275	6283
22.5	5743	5993	6132	6248	6346	6430	6444
23.0	5846	6066	6198	6372	6518	6564	6568
23.5	5945	6116	6308	6506	6635	6669	6677
24.0	5993	6225	6465	6674	6773	6797	6803
24.5	6058	6372	6593	6767	6876	6929	6932
25.0	6169	6471	6694	6846	6968	7061	7077
25.5	6278	6577	6761	6948	7130	7237	7260
26.0	6371	6675	6862	7115	7304	7377	7391
26.5	6478	6740	7028	7295	7400	7446	7471
27.0	6590	6856	7197	7378	7473	7529	7578
27.5	6633	7015	7296	7452	7562	7631	7675
28.0	6727	7161	7367	7556	7668	7715	7728
28.5	6905	7246	7461	7646	7704	7719	7751

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**CANDELA TABULATION - (Cont.)**

29.0	7045	7318	7563	7680	7720	7770	7810
29.5	7124	7395	7627	7691	7815	7884	7928
30.0	7204	7481	7632	7776	7935	7949	7962
30.5	7297	7522	7680	7853	7945	7947	7947
31.0	7381	7540	7769	7874	7932	7969	7981
31.5	7444	7588	7820	7857	7976	8029	8046
32.0	7440	7682	7819	7898	8030	8074	8103
32.5	7452	7730	7835	7966	8064	8099	8109
33.0	7480	7711	7872	8018	8092	8105	8122
33.5	7585	7729	7925	8024	8078	8058	8077
34.0	7594	7795	7960	8035	8043	8038	8040
34.5	7593	7833	7994	8006	7994	8030	8040
35.0	7640	7857	7973	7959	7990	8018	8008
35.5	7683	7863	7903	7943	7958	7920	7911
36.0	7717	7864	7880	7915	7847	7791	7795
36.5	7730	7798	7859	7819	7739	7703	7703
37.0	7734	7749	7825	7689	7646	7624	7610
37.5	7713	7734	7717	7603	7576	7541	7511
38.0	7653	7694	7619	7537	7510	7488	7450
38.5	7613	7613	7526	7455	7432	7402	7376
39.0	7567	7520	7460	7375	7340	7308	7294
39.5	7514	7445	7390	7308	7262	7217	7185
40.0	7432	7373	7310	7236	7176	7124	7090
40.5	7345	7305	7229	7141	7061	6987	6959
41.0	7274	7241	7139	7037	6910	6836	6799
41.5	7190	7161	7047	6912	6767	6696	6673
42.0	7126	7072	6929	6754	6590	6509	6484
42.5	7038	6982	6812	6624	6423	6305	6275
43.0	6954	6863	6639	6435	6284	6211	6191
43.5	6883	6754	6524	6327	6166	6088	6067
44.0	6788	6647	6376	6199	6032	5953	5936
44.5	6681	6483	6230	6060	5890	5807	5782
45.0	6575	6327	6085	5917	5746	5670	5652
45.5	6464	6195	5946	5774	5618	5566	5548
46.0	6305	6019	5802	5646	5512	5453	5429
46.5	6161	5891	5665	5527	5399	5311	5273
47.0	6008	5774	5546	5419	5266	5180	5129
47.5	5843	5631	5425	5287	5110	5018	4955
48.0	5718	5499	5292	5124	4919	4812	4721
48.5	5608	5385	5156	4952	4717	4606	4538
49.0	5436	5229	5001	4780	4562	4452	4392
49.5	5321	5088	4824	4597	4391	4270	4203
50.0	5187	4962	4651	4419	4199	4098	4028
50.5	5025	4780	4479	4253	4056	3954	3889
51.0	4916	4609	4304	4083	3886	3761	3693
51.5	4767	4465	4118	3898	3710	3590	3531
52.0	4586	4244	3948	3744	3592	3489	3436
52.5	4467	4140	3823	3624	3456	3368	3319
53.0	4285	3959	3671	3492	3337	3251	3215
53.5	4136	3801	3532	3368	3233	3140	3106
54.0	4013	3672	3405	3244	3108	3018	2982
54.5	3833	3510	3284	3131	2993	2890	2855
55.0	3710	3374	3166	3011	2872	2755	2708
55.5	3571	3273	3052	2878	2718	2619	2571
56.0	3399	3139	2935	2756	2599	2504	2466
56.5	3290	3019	2813	2631	2487	2396	2358

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L041706606.IES**

**CANDELA TABULATION - (Cont.)**

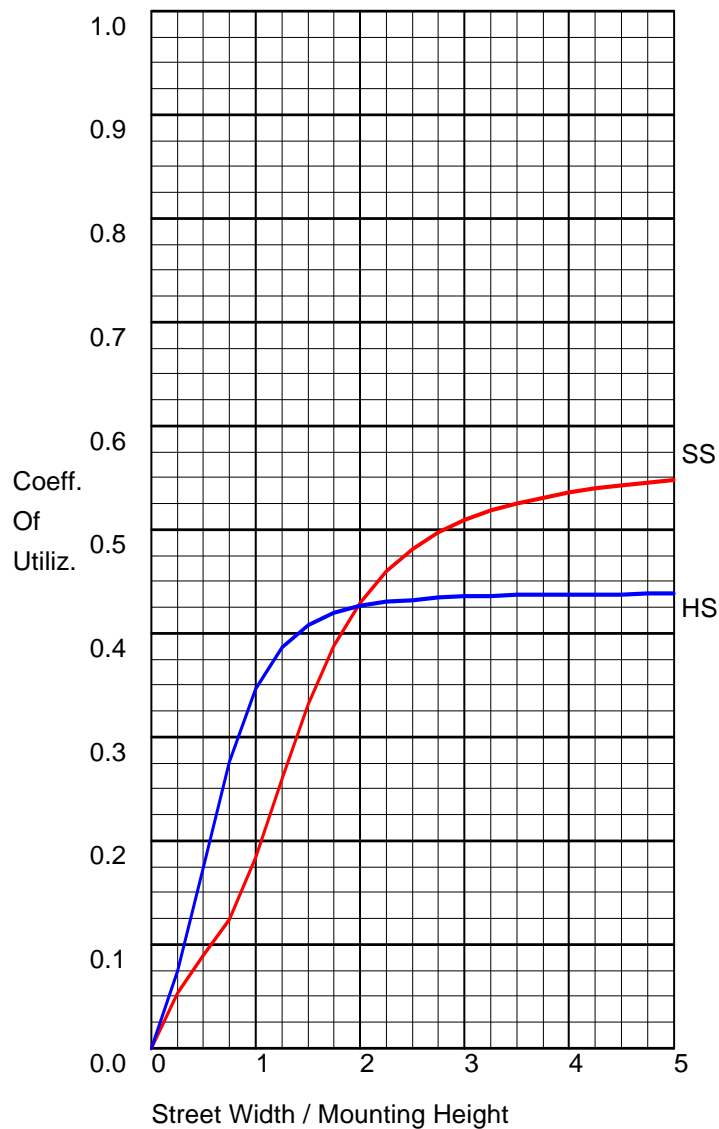
57.0	3176	2923	2680	2499	2361	2285	2247
57.5	3044	2782	2560	2387	2248	2168	2137
58.0	2938	2661	2444	2281	2157	2077	2038
58.5	2819	2557	2334	2172	2042	1970	1931
59.0	2679	2425	2226	2062	1934	1861	1824
59.5	2576	2321	2132	1970	1852	1784	1745
60.0	2469	2211	2025	1861	1740	1681	1652
60.5	2354	2091	1908	1751	1639	1579	1552
61.0	2235	2003	1817	1667	1559	1510	1487
61.5	2139	1912	1723	1583	1475	1425	1409
62.0	2052	1829	1641	1492	1400	1349	1339
62.5	1950	1714	1537	1416	1326	1279	1270
63.0	1836	1618	1443	1331	1254	1209	1197
63.5	1750	1527	1375	1261	1189	1142	1132
64.0	1634	1443	1299	1190	1118	1078	1070
64.5	1544	1365	1216	1112	1042	1009	996
65.0	1469	1290	1159	1054	985	948	938
65.5	1376	1226	1093	988	925	897	884
66.0	1290	1150	1029	924	863	837	819
66.5	1235	1087	967	871	810	784	773
67.0	1151	1023	912	817	764	740	730
67.5	1087	964	848	760	713	695	687
68.0	1037	907	803	715	671	648	643
68.5	971	857	757	668	630	612	607
69.0	917	798	703	625	588	566	559
69.5	864	752	660	586	546	524	516
70.0	805	689	604	540	512	493	486
70.5	754	650	568	507	476	457	448
71.0	712	612	528	471	439	421	413
71.5	654	561	490	436	406	387	380
72.0	615	526	458	401	373	355	348
72.5	571	480	420	372	344	325	319
73.0	526	438	385	343	316	298	292
73.5	481	409	358	315	289	272	266
74.0	448	383	330	290	264	248	243
74.5	406	348	304	266	243	229	223
75.0	374	325	281	242	221	208	203
75.5	344	296	255	222	201	189	183
76.0	320	268	231	204	184	172	168
76.5	289	249	212	185	167	157	153
77.0	268	230	193	169	150	141	139
77.5	241	207	175	152	137	129	127
78.0	220	188	159	137	123	117	114
78.5	200	171	145	124	111	105	103
79.0	183	155	130	110	101	95	94
79.5	165	139	117	101	91	86	84
80.0	148	125	105	91	81	77	76
80.5	133	112	94	81	73	70	69
81.0	119	100	84	73	66	63	62
81.5	106	89	75	65	59	56	56
82.0	94	79	67	58	53	51	50
82.5	83	70	60	52	47	45	45
83.0	73	63	53	46	42	41	40
83.5	64	54	47	41	38	36	36
84.0	55	48	41	37	34	33	32
84.5	48	42	36	32	30	29	29

IES ROAD REPORT  
PHOTOMETRIC FILENAME : L041706606.IES

CANDELA TABULATION - (Cont.)

85.0	41	36	32	29	27	26	26
85.5	35	31	28	26	24	23	23
86.0	30	28	25	23	22	21	21
86.5	25	24	22	20	20	19	19
87.0	21	20	19	18	18	17	17
87.5	19	18	18	17	16	16	16
88.0	17	17	16	16	15	15	15
88.5	16	16	15	15	15	14	14
89.0	16	16	15	15	15	14	14
89.5	16	16	16	15	15	15	14
90.0	0	0	0	0	0	0	0

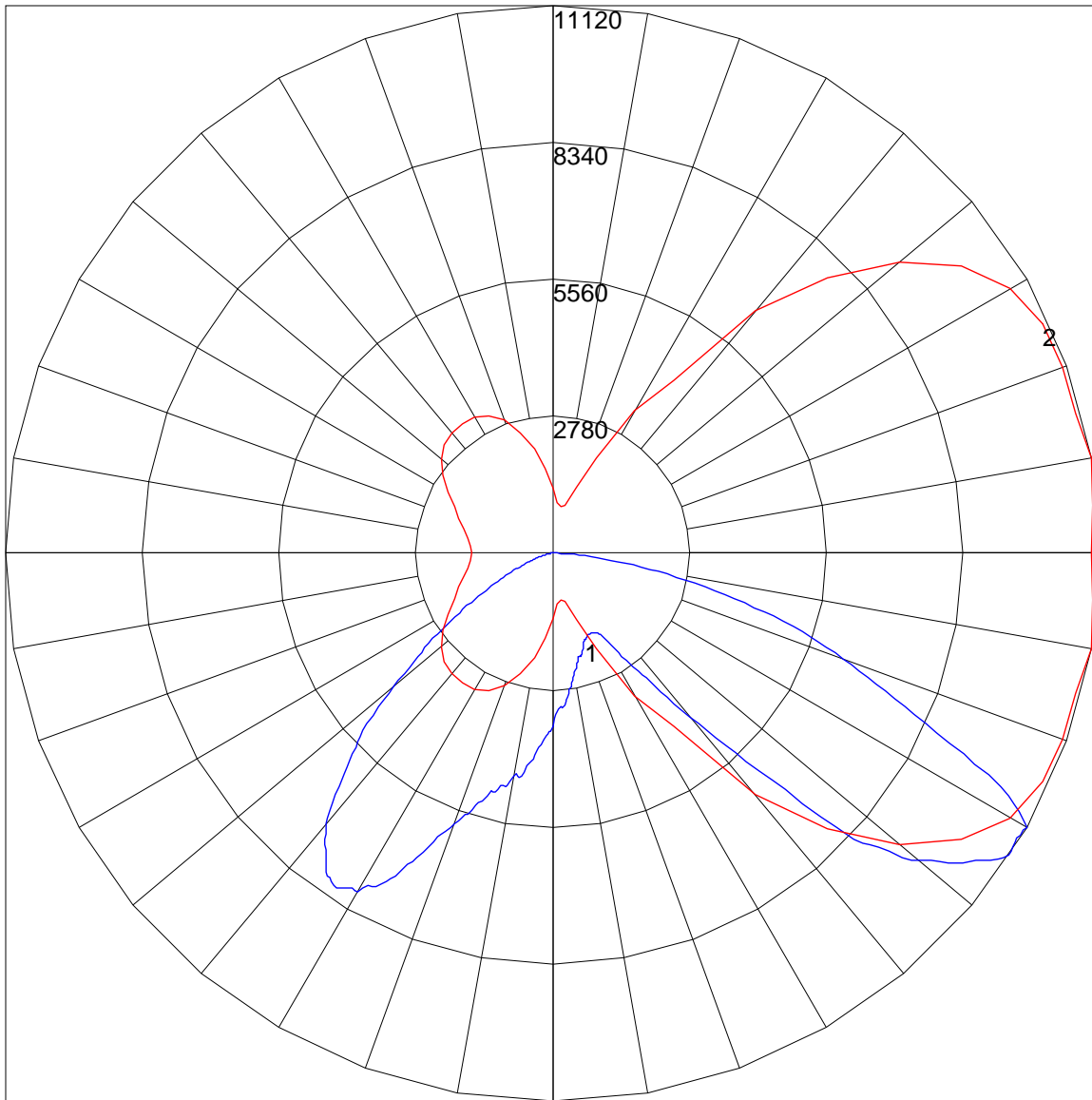
### COEFFICIENTS OF UTILIZATION



### FLUX DISTRIBUTION

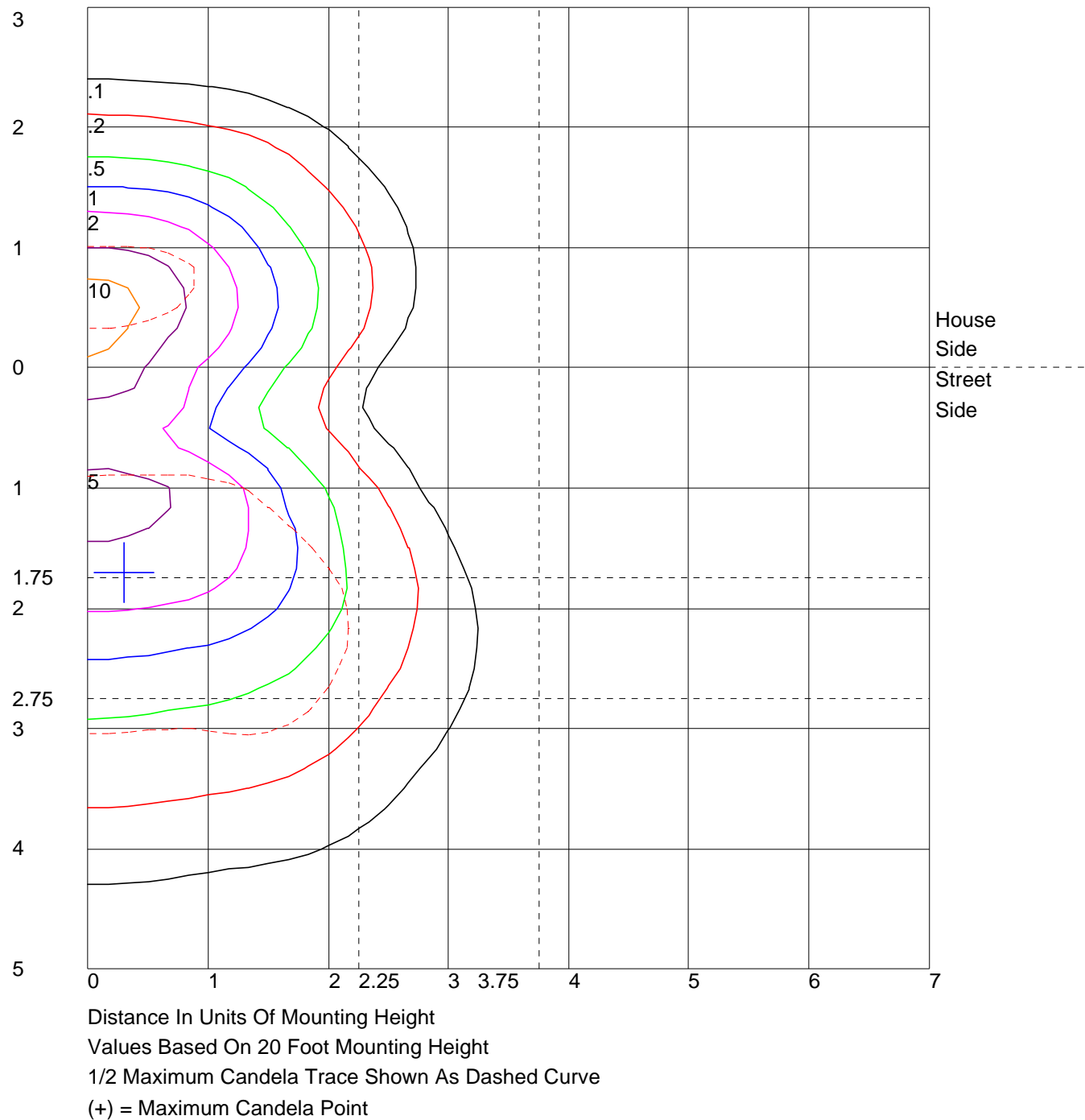
	Lumens	Percent Of Luminaire
Downward Street Side	10745.9	56.1
Downward House Side	8403.8	43.9
Downward Total	19149.7	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	19149.7	100.0

POLAR GRAPH

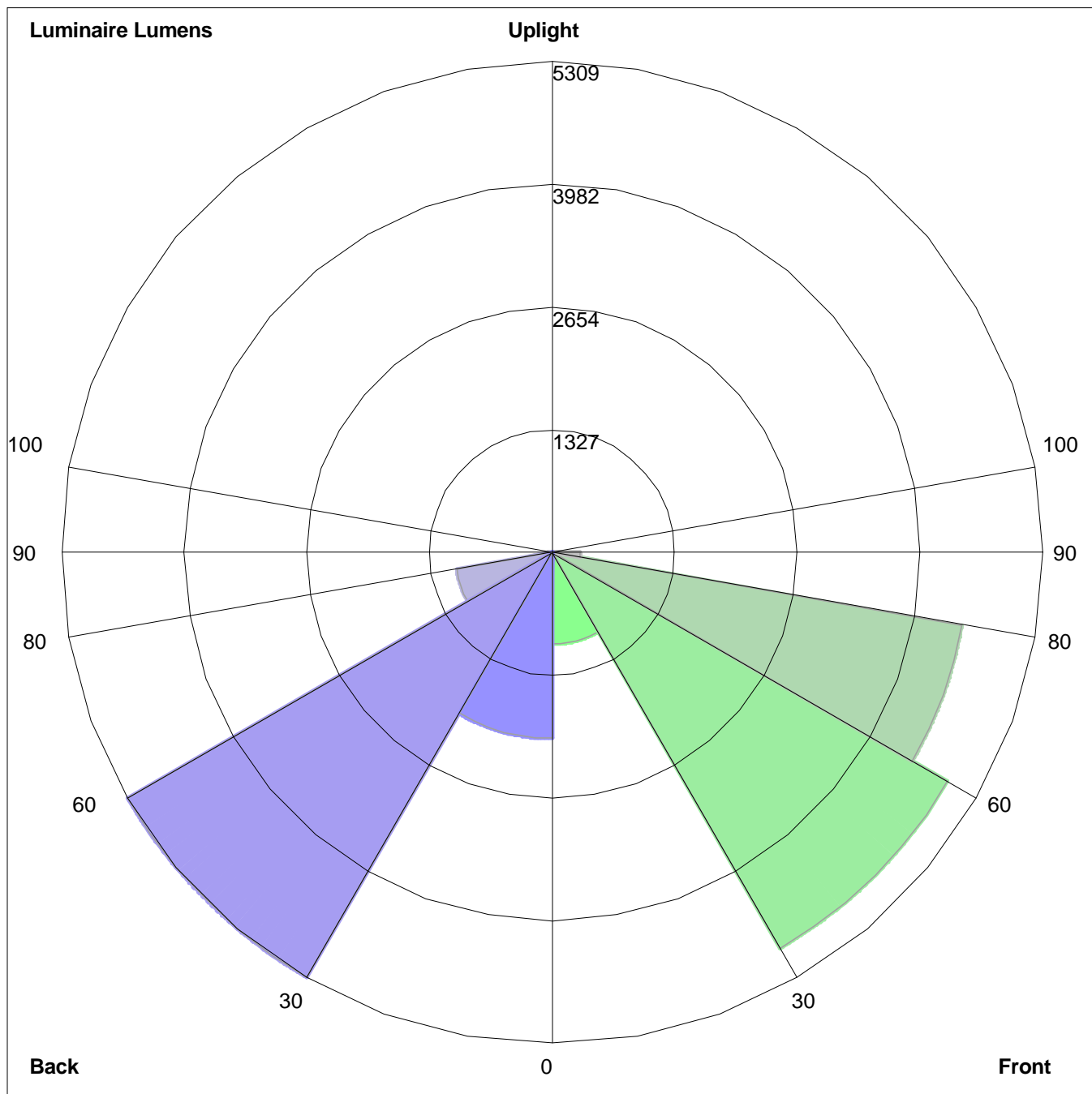


Maximum Candela = 11120 Located At Horizontal Angle = 10, Vertical Angle = 60  
# 1 - Vertical Plane Through Horizontal Angles (10 - 190) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (60) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:  
Front: Low=991.1, Medium=4942.3, High=4508.8, Very High=303.7  
Back: Low=2012.3, Medium= 5309.0, High=1050.2, Very High=32.3  
Uplight: Low=0.0, High=0.0

BUG Rating : B4-U0-G3