



# LUMINAIRE TESTING LABORATORY, INC.

SUSTAINING  
MEMBER  
of the  
IESNA

905 Harrison Street · Allentown, PA 18103 · 610-770-1044 · Fax 610-770-8912 · www.LuminaireTesting.com

LTL NUMBER: 17532 DATE: 01-12-2010  
 PREPARED FOR: RENOVA LIGHTING SYSTEMS  
 CATALOG NUMBER: ECS-ECO4-WN-332-UNV-13N-00W  
 LUMINAIRE: FORMED STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, NO ENCLOSURE.  
 LAMP: THREE 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.  
 LAMP CATALOG NUMBER: PHILIPS F32T8/841/ALTO  
 BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE-3X32T8/UNV-ISN-SC  
 MOUNTING: PENDANT  
 ELECTRICAL VALUES: 120.0VAC, 0.7095A, 85.04W

### Candela Distribution

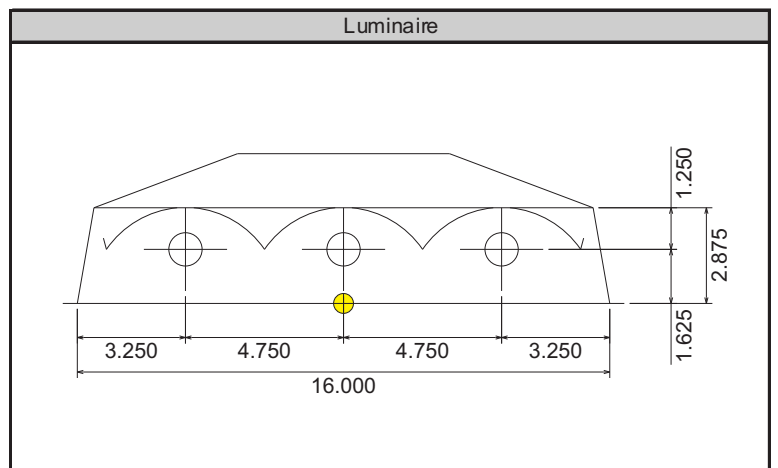
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	
5	2341	2344	2352	2352	2350	2352	2352	2344	2341	2344	2352	2352	2350	2352	2352	2344	223.4
15	2272	2276	2288	2291	2292	2291	2288	2276	2272	2276	2288	2291	2292	2291	2288	2276	645.3
25	2128	2138	2166	2204	2216	2204	2166	2138	2128	2138	2166	2204	2216	2204	2166	2138	1002.1
35	1919	1935	2016	2072	2091	2072	2016	1935	1919	1935	2016	2072	2091	2072	2016	1935	1256.7
45	1649	1684	1792	1868	1897	1868	1792	1684	1649	1684	1792	1868	1897	1868	1792	1684	1371.9
55	1327	1376	1507	1599	1635	1599	1507	1376	1327	1376	1507	1599	1635	1599	1507	1376	1326.7
65	947	993	1155	1179	1184	1179	1155	993	947	993	1155	1179	1184	1179	1155	993	1083.3
75	513	588	661	802	824	802	661	588	513	588	661	802	824	802	661	588	700.3
85	74	158	111	79	75	79	111	158	74	158	111	79	75	79	111	158	160.1
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

### Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1870.8	21.9%	24.1%
0-40	3127.6	36.6%	40.3%
0-60	5826.1	68.1%	75.0%
0-90	7769.8	90.9%	100.0%
90-180	0.0	0.0%	0.0%
0-180	7769.8	90.9%	100.0%

Total luminaire efficiency: 90.9%

CIE Type: Direct  
 Spacing Criterion: 0 deg: 1.28    90 deg: 1.37  
 180 deg: 1.28    270 deg: 1.37



Approved By: \_\_\_\_\_

**THIS REPORT BASED ON LM-41 AND OTHER PERTINENT IESNA PROCEDURES.**



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Candela Tabulation (5 degree Vertical Increments)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356	2356
5	2341	2344	2352	2352	2350	2352	2352	2344	2341	2344	2352	2352	2350	2352	2352	2344
10	2314	2319	2330	2328	2328	2328	2330	2319	2314	2319	2330	2328	2328	2328	2330	2319
15	2272	2276	2288	2291	2292	2291	2288	2276	2272	2276	2288	2291	2292	2291	2288	2276
20	2207	2214	2232	2250	2258	2250	2232	2214	2207	2214	2232	2250	2258	2250	2232	2214
25	2128	2138	2166	2204	2216	2204	2166	2138	2128	2138	2166	2204	2216	2204	2166	2138
30	2033	2047	2102	2148	2164	2148	2102	2047	2033	2047	2102	2148	2164	2148	2102	2047
35	1919	1935	2016	2072	2091	2072	2016	1935	1919	1935	2016	2072	2091	2072	2016	1935
40	1792	1814	1911	1976	1997	1976	1911	1814	1792	1814	1911	1976	1997	1976	1911	1814
45	1649	1684	1792	1868	1897	1868	1792	1684	1649	1684	1792	1868	1897	1868	1792	1684
50	1490	1535	1649	1739	1765	1739	1649	1535	1490	1535	1649	1739	1765	1739	1649	1535
55	1327	1376	1507	1599	1635	1599	1507	1376	1327	1376	1507	1599	1635	1599	1507	1376
60	1141	1189	1334	1411	1414	1411	1334	1189	1141	1189	1334	1411	1414	1411	1334	1189
65	947	993	1155	1179	1184	1179	1155	993	947	993	1155	1179	1184	1179	1155	993
70	736	795	905	945	967	945	905	795	736	795	905	945	967	945	905	795
75	513	588	661	802	824	802	661	588	513	588	661	802	824	802	661	588
80	287	359	471	458	438	458	471	359	287	359	471	458	438	458	471	359
85	74	158	111	79	75	79	111	158	74	158	111	79	75	79	111	158
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	56.3	45-50	690.6	90-95	0.0	135-140	0.0
5-10	167.2	50-55	679.5	95-100	0.0	140-145	0.0
10-15	273.3	55-60	647.2	100-105	0.0	145-150	0.0
15-20	372.1	60-65	584.8	105-110	0.0	150-155	0.0
20-25	461.9	65-70	498.5	110-115	0.0	155-160	0.0
25-30	540.2	70-75	404.7	115-120	0.0	160-165	0.0
30-35	604.7	75-80	295.6	120-125	0.0	165-170	0.0
35-40	652.0	80-85	137.4	125-130	0.0	170-175	0.0
40-45	681.3	85-90	22.7	130-135	0.0	175-180	0.0



Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.108	1.108	1.108	1.108	1.082	1.082	1.082	1.082	1.057	1.057	1.057	1.057
1	1.008	0.957	0.912	0.871	0.982	0.935	0.894	0.856	0.956	0.914	0.877	0.842
2	0.913	0.825	0.754	0.694	0.887	0.807	0.741	0.686	0.862	0.789	0.729	0.677
3	0.828	0.718	0.634	0.567	0.804	0.703	0.624	0.562	0.781	0.688	0.615	0.557
4	0.756	0.631	0.542	0.474	0.733	0.618	0.535	0.47	0.711	0.606	0.528	0.467
5	0.693	0.56	0.47	0.404	0.672	0.55	0.464	0.401	0.652	0.539	0.459	0.399
6	0.638	0.502	0.412	0.349	0.619	0.493	0.408	0.347	0.601	0.484	0.404	0.346
7	0.59	0.453	0.366	0.306	0.572	0.445	0.363	0.305	0.556	0.438	0.359	0.303
8	0.548	0.412	0.328	0.271	0.532	0.405	0.325	0.27	0.517	0.398	0.322	0.269
9	0.51	0.377	0.296	0.243	0.496	0.371	0.294	0.242	0.483	0.365	0.292	0.241
10	0.478	0.346	0.269	0.219	0.465	0.341	0.268	0.218	0.453	0.337	0.266	0.218

Ceiling Cavity Reflectance	50				30			10			0
Wall Reflectance	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	1.01	1.01	1.01	1.01	0.967	0.967	0.967	0.927	0.927	0.927	0.909
1	0.91	0.875	0.844	0.815	0.84	0.814	0.79	0.807	0.786	0.767	0.747
2	0.817	0.757	0.705	0.661	0.726	0.684	0.646	0.699	0.663	0.631	0.611
3	0.738	0.66	0.598	0.546	0.635	0.581	0.537	0.611	0.566	0.527	0.506
4	0.672	0.583	0.514	0.46	0.561	0.502	0.454	0.541	0.49	0.447	0.427
5	0.616	0.519	0.449	0.394	0.501	0.439	0.39	0.484	0.429	0.385	0.365
6	0.568	0.467	0.396	0.342	0.451	0.388	0.339	0.437	0.38	0.336	0.317
7	0.526	0.423	0.352	0.301	0.41	0.346	0.299	0.397	0.34	0.296	0.278
8	0.49	0.386	0.317	0.267	0.375	0.312	0.266	0.364	0.307	0.264	0.246
9	0.459	0.355	0.287	0.24	0.345	0.283	0.238	0.335	0.279	0.237	0.22
10	0.431	0.327	0.262	0.217	0.319	0.258	0.216	0.31	0.255	0.214	0.198

Average Luminance Table (cd/m<sup>2</sup>)

	0	45	90
0	4843	4843	4843
45	4796	5210	5517
55	4757	5403	5861
65	4607	5620	5761
75	4076	5255	6545
85	1754	2626	1760

THIS TEST WAS CONDUCTED USING RELATIVE PHOTOMETRY TECHNIQUES ACCORDING TO STANDARD IESNA PROCEDURES. THE USER MUST THEREFORE USE CAUTION IN THE FOLLOWING SITUATIONS: 1) THIS TEST WAS PERFORMED USING A SPECIFIC BALLAST/LAMP COMBINATION. EXTRAPOLATION OF THESE DATA FOR OTHER BALLAST/LAMP COMBINATIONS MAY PRODUCE ERRONEOUS RESULTS. 2) ACCORDING TO IESNA PROCEDURES, THE BALLAST(S) AND LAMP(S) ARE PRESUMED TO PRODUCE 100% OF RATED OUTPUT. AN APPROPRIATE BALLAST FACTOR MUST BE APPLIED TO THE LUMEN OUTPUT RATINGS AND LUMINOUS INTENSITY VALUES GIVEN. 3) THIS TEST WAS CONDUCTED IN A CONTROLLED LABORATORY ENVIRONMENT WHERE THE AMBIENT TEMPERATURE WAS HELD AT 25 °C ±1°C. FIELD PERFORMANCE MAY DIFFER PARTICULARLY IN REGARDS TO CHANGE IN LUMINOUS OUTPUT AS A RESULT OF DIFFERENCE IN AMBIENT TEMPERATURE AND METHOD OF MOUNTING THE LUMINAIRE.

