LTL 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: 18455 DATE: 03-15-2010
PREPARED FOR: RENOVA LIGHTING SYSTEMS
CATALOG NUMBER: EFK-24-W-3LT8-V
LUMINAIRE: FORMED WHITE ENAMEL 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" QHE3X32T8/UNV-ISL-SC
MOUNTING: RECESSED
ELECTRICAL VALUES: 120.0VAC, 0.6156A, 73.79W

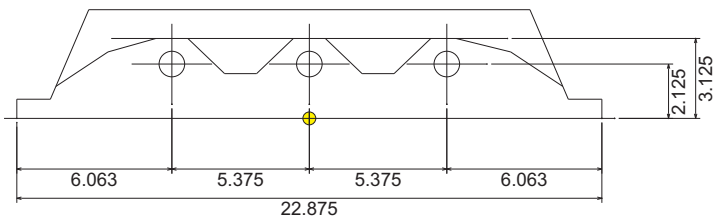
Candela Distribution

	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	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	
5	2272	2272	2275	2277	2276	2277	2275	2272	2272	2272	2275	2277	2276	2277	2275	2272	216.3
15	2200	2202	2211	2221	2223	2221	2211	2202	2200	2202	2211	2221	2223	2221	2211	2202	624.9
25	2057	2064	2099	2131	2143	2131	2099	2064	2057	2064	2099	2131	2143	2131	2099	2064	968.5
35	1846	1868	1944	2012	2039	2012	1944	1868	1846	1868	1944	2012	2039	2012	1944	1868	1216.5
45	1571	1621	1752	1872	1915	1872	1752	1621	1571	1621	1752	1872	1915	1872	1752	1621	1349.0
55	1240	1327	1533	1671	1720	1671	1533	1327	1240	1327	1533	1671	1720	1671	1533	1327	1343.6
65	863	999	1227	1385	1426	1385	1227	999	863	999	1227	1385	1426	1385	1227	999	1173.4
75	455	610	804	865	874	865	804	610	455	610	804	865	874	865	804	610	778.1
85	74	164	142	100	85	100	142	164	74	164	142	100	85	100	142	164	185.2
90	0	2	2	3	3	3	2	2	0	2	2	3	3	3	2	2	
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	1809.7	21.2%	23.0%
0-40	3026.2	35.4%	38.5%
0-60	5718.8	66.9%	72.8%
0-90	7855.6	91.9%	100.0%
90-180	0.0	0.0%	0.0%
0-180	7855.6	91.9%	100.0%

Luminaire



Total luminaire efficiency: 91.9%

CIE Type: Direct
Spacing Criterion: 0 deg: 1.27 90 deg: 1.38
180 deg: 1.27 270 deg: 1.38

Approved By: MG

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	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285	2285
5	2272	2272	2275	2277	2276	2277	2275	2272	2272	2272	2275	2277	2276	2277	2275	2272
10	2245	2246	2250	2253	2253	2253	2250	2246	2245	2246	2250	2253	2253	2253	2250	2246
15	2200	2202	2211	2221	2223	2221	2211	2202	2200	2202	2211	2221	2223	2221	2211	2202
20	2138	2140	2160	2180	2187	2180	2160	2140	2138	2140	2160	2180	2187	2180	2160	2140
25	2057	2064	2099	2131	2143	2131	2099	2064	2057	2064	2099	2131	2143	2131	2099	2064
30	1960	1973	2027	2075	2093	2075	2027	1973	1960	1973	2027	2075	2093	2075	2027	1973
35	1846	1868	1944	2012	2039	2012	1944	1868	1846	1868	1944	2012	2039	2012	1944	1868
40	1716	1751	1852	1944	1979	1944	1852	1751	1716	1751	1852	1944	1979	1944	1852	1751
45	1571	1621	1752	1872	1915	1872	1752	1621	1571	1621	1752	1872	1915	1872	1752	1621
50	1412	1480	1647	1785	1828	1785	1647	1480	1412	1480	1647	1785	1828	1785	1647	1480
55	1240	1327	1533	1671	1720	1671	1533	1327	1240	1327	1533	1671	1720	1671	1533	1327
60	1057	1165	1387	1548	1599	1548	1387	1165	1057	1165	1387	1548	1599	1548	1387	1165
65	863	999	1227	1385	1426	1385	1227	999	863	999	1227	1385	1426	1385	1227	999
70	663	818	1041	1173	1185	1173	1041	818	663	818	1041	1173	1185	1173	1041	818
75	455	610	804	865	874	865	804	610	455	610	804	865	874	865	804	610
80	254	413	505	580	564	580	505	413	254	413	505	580	564	580	505	413
85	74	164	142	100	85	100	142	164	74	164	142	100	85	100	142	164
90	0	2	2	3	3	3	2	2	0	2	2	3	3	3	2	2
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	54.5		45-50	683.2		90-95	0.0		135-140	0.0
5-10	161.8		50-55	682.1		95-100	0.0		140-145	0.0
10-15	264.6		55-60	661.4		100-105	0.0		145-150	0.0
15-20	360.3		60-65	619.9		105-110	0.0		150-155	0.0
20-25	446.7		65-70	553.5		110-115	0.0		155-160	0.0
25-30	521.8		70-75	451.6		115-120	0.0		160-165	0.0
30-35	584.2		75-80	326.5		120-125	0.0		165-170	0.0
35-40	632.4		80-85	162.4		125-130	0.0		170-175	0.0
40-45	665.8		85-90	22.8		130-135	0.0		175-180	0.0

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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	1.12	1.12	1.12	1.12	1.094	1.094	1.094	1.094	1.068	1.068	1.068	1.068
1	1.016	0.963	0.915	0.873	0.989	0.941	0.897	0.858	0.963	0.919	0.88	0.844
2	0.917	0.827	0.753	0.691	0.891	0.808	0.74	0.682	0.866	0.79	0.727	0.674
3	0.831	0.717	0.63	0.561	0.806	0.701	0.621	0.556	0.782	0.687	0.611	0.551
4	0.757	0.629	0.537	0.467	0.734	0.616	0.53	0.464	0.712	0.603	0.523	0.46
5	0.693	0.558	0.464	0.396	0.672	0.547	0.459	0.394	0.652	0.536	0.453	0.392
6	0.638	0.499	0.407	0.342	0.619	0.489	0.403	0.34	0.6	0.48	0.398	0.339
7	0.59	0.45	0.361	0.299	0.572	0.442	0.357	0.298	0.556	0.434	0.354	0.297
8	0.547	0.408	0.323	0.265	0.531	0.402	0.32	0.264	0.517	0.395	0.317	0.263
9	0.51	0.373	0.291	0.237	0.496	0.368	0.289	0.236	0.482	0.362	0.287	0.235
10	0.477	0.343	0.265	0.213	0.464	0.338	0.263	0.213	0.452	0.334	0.261	0.212

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	1.021	1.021	1.021	1.021	0.977	0.977	0.977	0.938	0.938	0.938	0.919
1	0.916	0.88	0.847	0.817	0.844	0.817	0.792	0.81	0.788	0.768	0.748
2	0.819	0.757	0.704	0.658	0.726	0.682	0.643	0.698	0.661	0.628	0.607
3	0.738	0.658	0.594	0.541	0.632	0.577	0.531	0.608	0.561	0.521	0.5
4	0.671	0.58	0.509	0.453	0.558	0.496	0.447	0.537	0.484	0.441	0.419
5	0.615	0.516	0.443	0.387	0.497	0.433	0.383	0.48	0.423	0.378	0.358
6	0.567	0.463	0.39	0.335	0.447	0.382	0.332	0.432	0.374	0.329	0.309
7	0.525	0.419	0.347	0.294	0.406	0.341	0.292	0.393	0.334	0.29	0.27
8	0.489	0.383	0.312	0.261	0.371	0.306	0.259	0.36	0.301	0.258	0.239
9	0.457	0.351	0.282	0.234	0.341	0.278	0.233	0.331	0.274	0.231	0.214
10	0.43	0.324	0.257	0.211	0.315	0.254	0.21	0.307	0.25	0.209	0.192

Average Luminance Table (cd/m²)

	0	45	90
0	3303	3303	3303
45	3212	3582	3915
55	3124	3863	4334
65	2951	4198	4879
75	2540	4488	4880
85	1227	2354	1415

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.

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