



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: 17537 DATE: 02-04-2010
 PREPARED FOR: RENOVA LIGHTING SYSTEMS
 CATALOG NUMBER: ECS-ECO4-MN-354-UNV-22H-00W
 LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, NO ENCLOSURE.
 LAMP: THREE 54 WATT HIGH OUTPUT T5 LINEAR FLUORESCENT LAMPS RATED AT 4400 LUMENS EACH.
 LAMP CATALOG NUMBER: PHILIPS F54T5/841/HO/ALTO
 BALLAST: TWO SYLVANIA "QUICKTRONIC" QTP2X54T5HO/UNV-PSN-HT
 MOUNTING: PENDANT
 ELECTRICAL VALUES: 120.0VAC, 1.4010A, 167.8W

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	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	
5	6274	6311	6402	6434	6444	6434	6402	6311	6274	6311	6402	6434	6444	6434	6402	6311	606.9
15	6041	6211	6089	5926	5818	5926	6089	6211	6041	6211	6089	5926	5818	5926	6089	6211	1692.6
25	5574	5613	5055	4490	4278	4490	5055	5613	5574	5613	5055	4490	4278	4490	5055	5613	2305.2
35	4890	4675	3639	2988	2815	2988	3639	4675	4890	4675	3639	2988	2815	2988	3639	4675	2368.2
45	4000	3400	2337	1984	1955	1984	2337	3400	4000	3400	2337	1984	1955	1984	2337	3400	2069.5
55	2963	2071	1512	1582	1647	1582	1512	2071	2963	2071	1512	1582	1647	1582	1512	2071	1672.7
65	1878	1039	1144	1068	1109	1068	1144	1039	1878	1039	1144	1068	1109	1068	1144	1039	1190.0
75	845	564	720	979	991	979	720	564	845	564	720	979	991	979	720	564	789.8
85	74	158	79	79	81	79	79	158	74	158	79	79	81	79	79	158	159.2
90	0	2	5	7	7	7	5	2	0	2	5	7	7	7	5	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	

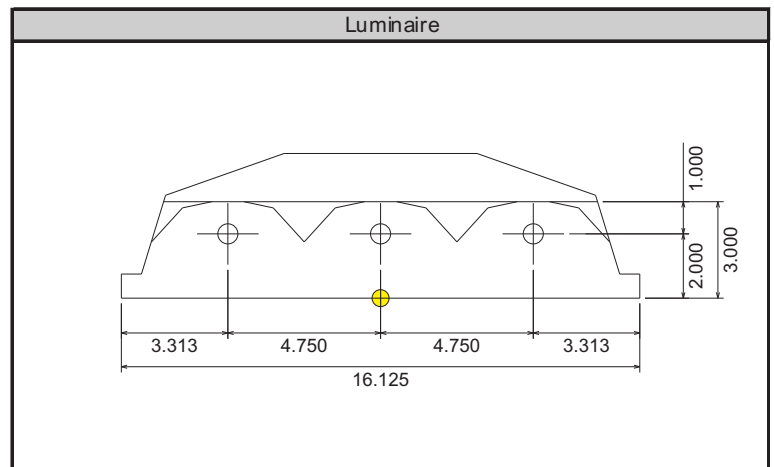
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	4604.7	34.9%	35.8%
0-40	6972.9	52.8%	54.2%
0-60	10715.1	81.2%	83.4%
0-90	12854.1	97.4%	100.0%
90-180	0.0	0.0%	0.0%
0-180	12854.1	97.4%	100.0%

Total luminaire efficiency: 97.4%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.24 90 deg: 0.94
 180 deg: 1.24 270 deg: 0.94



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	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292	6292
5	6274	6311	6402	6434	6444	6434	6402	6311	6274	6311	6402	6434	6444	6434	6402	6311
10	6189	6316	6375	6307	6269	6307	6375	6316	6189	6316	6375	6307	6269	6307	6375	6316
15	6041	6211	6089	5926	5818	5926	6089	6211	6041	6211	6089	5926	5818	5926	6089	6211
20	5837	5974	5673	5257	5099	5257	5673	5974	5837	5974	5673	5257	5099	5257	5673	5974
25	5574	5613	5055	4490	4278	4490	5055	5613	5574	5613	5055	4490	4278	4490	5055	5613
30	5260	5195	4372	3701	3484	3701	4372	5195	5260	5195	4372	3701	3484	3701	4372	5195
35	4890	4675	3639	2988	2815	2988	3639	4675	4890	4675	3639	2988	2815	2988	3639	4675
40	4470	4043	2939	2415	2271	2415	2939	4043	4470	4043	2939	2415	2271	2415	2939	4043
45	4000	3400	2337	1984	1955	1984	2337	3400	4000	3400	2337	1984	1955	1984	2337	3400
50	3493	2724	1834	1778	1760	1778	1834	2724	3493	2724	1834	1778	1760	1778	1834	2724
55	2963	2071	1512	1582	1647	1582	1512	2071	2963	2071	1512	1582	1647	1582	1512	2071
60	2422	1498	1299	1384	1340	1384	1299	1498	2422	1498	1299	1384	1340	1384	1299	1498
65	1878	1039	1144	1068	1109	1068	1144	1039	1878	1039	1144	1068	1109	1068	1144	1039
70	1348	746	823	1017	1104	1017	823	746	1348	746	823	1017	1104	1017	823	746
75	845	564	720	979	991	979	720	564	845	564	720	979	991	979	720	564
80	401	328	524	477	462	477	524	328	401	328	524	477	462	477	524	328
85	74	158	79	79	81	79	79	158	74	158	79	79	81	79	79	158
90	0	2	5	7	7	7	5	2	0	2	5	7	7	7	5	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	151.8	45-50	988.0	90-95	0.0	135-140	0.0
5-10	455.1	50-55	888.3	95-100	0.0	140-145	0.0
10-15	733.1	55-60	784.4	100-105	0.0	145-150	0.0
15-20	959.6	60-65	653.8	105-110	0.0	150-155	0.0
20-25	1113.5	65-70	536.2	110-115	0.0	155-160	0.0
25-30	1191.7	70-75	456.9	115-120	0.0	160-165	0.0
30-35	1205.2	75-80	332.8	120-125	0.0	165-170	0.0
35-40	1163.0	80-85	135.2	125-130	0.0	170-175	0.0
40-45	1081.5	85-90	24.1	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	1.188	1.188	1.188	1.188	1.159	1.159	1.159	1.159	1.132	1.132	1.132	1.132
1	1.096	1.049	1.007	0.969	1.068	1.026	0.988	0.953	1.042	1.004	0.969	0.938
2	1.006	0.925	0.858	0.803	0.98	0.906	0.845	0.793	0.955	0.888	0.832	0.784
3	0.926	0.822	0.742	0.68	0.901	0.806	0.733	0.674	0.878	0.791	0.723	0.668
4	0.854	0.736	0.651	0.587	0.832	0.723	0.643	0.583	0.81	0.71	0.636	0.579
5	0.791	0.664	0.577	0.514	0.77	0.653	0.572	0.511	0.751	0.643	0.566	0.508
6	0.735	0.603	0.517	0.456	0.716	0.594	0.512	0.454	0.698	0.585	0.508	0.452
7	0.685	0.552	0.467	0.408	0.668	0.544	0.463	0.407	0.651	0.536	0.46	0.406
8	0.64	0.507	0.425	0.369	0.625	0.5	0.422	0.368	0.61	0.494	0.419	0.367
9	0.6	0.468	0.389	0.336	0.586	0.462	0.387	0.335	0.573	0.457	0.384	0.335
10	0.564	0.434	0.358	0.308	0.552	0.429	0.356	0.308	0.54	0.424	0.354	0.307

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	1.082	1.082	1.082	1.082	1.036	1.036	1.036	0.994	0.994	0.994	0.974
1	0.994	0.963	0.934	0.908	0.925	0.902	0.881	0.89	0.872	0.854	0.835
2	0.909	0.854	0.807	0.766	0.823	0.783	0.749	0.794	0.761	0.732	0.712
3	0.835	0.763	0.704	0.656	0.736	0.687	0.645	0.712	0.67	0.634	0.614
4	0.771	0.687	0.622	0.571	0.664	0.609	0.563	0.644	0.596	0.556	0.536
5	0.714	0.623	0.555	0.503	0.604	0.544	0.498	0.586	0.534	0.493	0.473
6	0.665	0.568	0.499	0.448	0.552	0.491	0.444	0.537	0.483	0.441	0.422
7	0.621	0.521	0.453	0.403	0.508	0.446	0.4	0.495	0.44	0.397	0.379
8	0.583	0.481	0.413	0.365	0.469	0.408	0.363	0.458	0.402	0.361	0.343
9	0.548	0.446	0.379	0.333	0.436	0.375	0.331	0.426	0.371	0.33	0.313
10	0.517	0.415	0.35	0.306	0.406	0.347	0.304	0.398	0.343	0.303	0.287

Average Luminance Table (cd/m²)

	0	45	90
0	12937	12937	12937
45	11631	6796	5685
55	10622	5421	5903
65	9138	5566	5395
75	6710	5716	7873
85	1746	1858	1901

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.

