



# 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: 17542

DATE: 02-02-2010

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-ECO4-WN-554-UNV-32H-00W

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, NO ENCLOSURE.

LAMP: FIVE 54 WATT HIGH OUTPUT T5 LINEAR FLUORESCENT LAMPS RATED AT 4400 LUMENS EACH.

LAMP CATALOG NUMBER: PHILIPS F54T5/841/HO/ALTO

BALLAST: THREE SYLVANIA "QUICKTRONIC" QTP2X54T5HO/UNV-PSN-HT

MOUNTING: PENDANT

ELECTRICAL VALUES: 120.0VAC, 2.243A, 268.6W

### 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	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	
5	5959	5925	5954	5959	5954	5959	5954	5925	5959	5925	5954	5959	5954	5959	5954	5925	565.7
15	5769	5747	5779	5790	5788	5790	5779	5747	5769	5747	5779	5790	5788	5790	5779	5747	1630.9
25	5397	5387	5438	5492	5512	5492	5438	5387	5397	5387	5438	5492	5512	5492	5438	5387	2510.9
35	4857	4852	4975	5132	5187	5132	4975	4852	4857	4852	4975	5132	5187	5132	4975	4852	3127.0
45	4160	4169	4427	4618	4698	4618	4427	4169	4160	4169	4427	4618	4698	4618	4427	4169	3403.4
55	3323	3365	3718	3834	3853	3834	3718	3365	3323	3365	3718	3834	3853	3834	3718	3365	3243.9
65	2354	2435	2721	3072	3180	3072	2721	2435	2354	2435	2721	3072	3180	3072	2721	2435	2719.4
75	1258	1368	1775	1944	1958	1944	1775	1368	1258	1368	1775	1944	1958	1944	1775	1368	1742.7
85	162	343	223	201	195	201	223	343	162	343	223	201	195	201	223	343	358.9
90	1	2	6	8	10	8	6	2	1	2	6	8	10	8	6	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	0.0

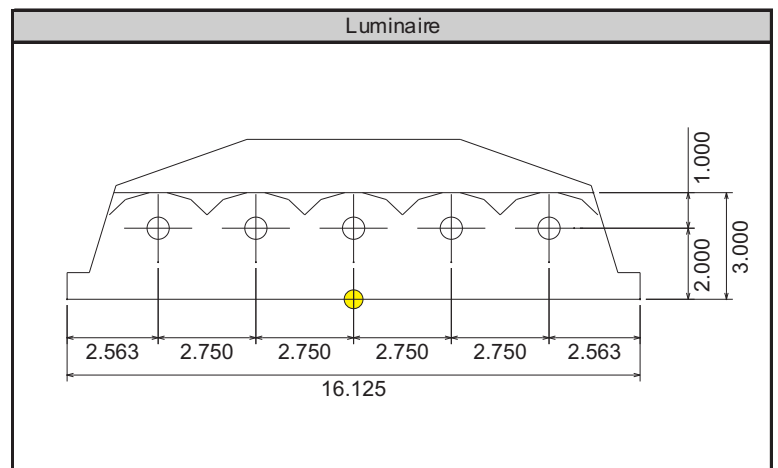
### Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	4707.4	21.4%	24.4%
0-40	7834.4	35.6%	40.6%
0-60	14481.8	65.8%	75.0%
0-90	19302.7	87.7%	100.0%
90-180	0.0	0.0%	0.0%
0-180	19302.7	87.7%	100.0%

Total luminaire efficiency: 87.7%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.28 90 deg: 1.35  
180 deg: 1.28 270 deg: 1.35



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	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965	5965
5	5959	5925	5954	5959	5954	5959	5954	5925	5959	5925	5954	5959	5954	5959	5954	5925
10	5888	5860	5887	5890	5891	5890	5887	5860	5888	5860	5887	5890	5891	5890	5887	5860
15	5769	5747	5779	5790	5788	5790	5779	5747	5769	5747	5779	5790	5788	5790	5779	5747
20	5605	5585	5624	5650	5660	5650	5624	5585	5605	5585	5624	5650	5660	5650	5624	5585
25	5397	5387	5438	5492	5512	5492	5438	5387	5397	5387	5438	5492	5512	5492	5438	5387
30	5146	5140	5223	5312	5361	5312	5223	5140	5146	5140	5223	5312	5361	5312	5223	5140
35	4857	4852	4975	5132	5187	5132	4975	4852	4857	4852	4975	5132	5187	5132	4975	4852
40	4526	4527	4720	4895	4956	4895	4720	4527	4526	4527	4720	4895	4956	4895	4720	4527
45	4160	4169	4427	4618	4698	4618	4427	4169	4160	4169	4427	4618	4698	4618	4427	4169
50	3753	3775	4083	4310	4335	4310	4083	3775	3753	3775	4083	4310	4335	4310	4083	3775
55	3323	3365	3718	3834	3853	3834	3718	3365	3323	3365	3718	3834	3853	3834	3718	3365
60	2856	2942	3255	3379	3498	3379	3255	2942	2856	2942	3255	3379	3498	3379	3255	2942
65	2354	2435	2721	3072	3180	3072	2721	2435	2354	2435	2721	3072	3180	3072	2721	2435
70	1824	1941	2330	2589	2558	2589	2330	1941	1824	1941	2330	2589	2558	2589	2330	1941
75	1258	1368	1775	1944	1958	1944	1775	1368	1258	1368	1775	1944	1958	1944	1775	1368
80	683	919	1106	1058	964	1058	1106	919	683	919	1106	1058	964	1058	1106	919
85	162	343	223	201	195	201	223	343	162	343	223	201	195	201	223	343
90	1	2	6	8	10	8	6	2	1	2	6	8	10	8	6	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	142.4	45-50	1712.1	90-95	0.0	135-140	0.0
5-10	423.3	50-55	1670.7	95-100	0.0	140-145	0.0
10-15	691.5	55-60	1573.3	100-105	0.0	145-150	0.0
15-20	939.4	60-65	1443.2	105-110	0.0	150-155	0.0
20-25	1160.5	65-70	1276.2	110-115	0.0	155-160	0.0
25-30	1350.4	70-75	1028.6	115-120	0.0	160-165	0.0
30-35	1506.3	75-80	714.0	120-125	0.0	165-170	0.0
35-40	1620.7	80-85	308.0	125-130	0.0	170-175	0.0
40-45	1691.4	85-90	50.9	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	1.07	1.07	1.07	1.07	1.045	1.045	1.045	1.045	1.02	1.02	1.02	1.02
1	0.974	0.925	0.881	0.842	0.948	0.904	0.864	0.828	0.924	0.884	0.848	0.815
2	0.882	0.798	0.729	0.672	0.857	0.78	0.717	0.664	0.833	0.763	0.705	0.655
3	0.801	0.694	0.613	0.549	0.777	0.68	0.604	0.544	0.755	0.665	0.595	0.539
4	0.731	0.611	0.524	0.459	0.709	0.598	0.518	0.456	0.688	0.586	0.511	0.453
5	0.67	0.542	0.455	0.391	0.65	0.532	0.45	0.389	0.631	0.522	0.445	0.387
6	0.617	0.486	0.4	0.339	0.599	0.477	0.396	0.337	0.581	0.469	0.392	0.336
7	0.571	0.439	0.355	0.297	0.554	0.431	0.352	0.296	0.538	0.424	0.348	0.295
8	0.53	0.399	0.318	0.264	0.515	0.392	0.315	0.263	0.501	0.386	0.313	0.262
9	0.494	0.365	0.288	0.236	0.48	0.359	0.285	0.235	0.468	0.354	0.283	0.235
10	0.462	0.336	0.262	0.213	0.45	0.331	0.26	0.213	0.439	0.326	0.258	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	0.975	0.975	0.975	0.975	0.933	0.933	0.933	0.895	0.895	0.895	0.877
1	0.879	0.846	0.816	0.789	0.812	0.787	0.764	0.78	0.76	0.742	0.723
2	0.789	0.732	0.683	0.64	0.703	0.661	0.625	0.676	0.641	0.611	0.591
3	0.713	0.639	0.579	0.529	0.614	0.563	0.52	0.591	0.548	0.511	0.491
4	0.65	0.564	0.498	0.446	0.543	0.486	0.44	0.524	0.474	0.434	0.414
5	0.596	0.503	0.435	0.382	0.485	0.425	0.378	0.469	0.416	0.374	0.354
6	0.549	0.452	0.384	0.332	0.437	0.376	0.329	0.423	0.369	0.326	0.307
7	0.509	0.41	0.342	0.292	0.397	0.336	0.29	0.385	0.33	0.288	0.27
8	0.475	0.374	0.308	0.26	0.363	0.303	0.258	0.353	0.298	0.256	0.239
9	0.444	0.344	0.279	0.233	0.334	0.275	0.232	0.325	0.271	0.231	0.214
10	0.417	0.318	0.254	0.211	0.309	0.251	0.21	0.301	0.248	0.209	0.193

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

	0	45	90
0	12265	12265	12265
45	12096	12872	13660
55	11910	13327	13811
65	11454	13239	15473
75	9992	14099	15558
85	3833	5256	4602

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.

