



# 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: 16690

DATE: 09-24-2009

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-RCN4-WN-232-UNV-12L-FRL

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, FORMED WHITE ENAMEL STEEL ENCLOSURE WITH FROSTED LINEAR PRISMATIC PLASTIC LENSES.

LAMP: TWO 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.

LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO

BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE2X32T8/UNV-ISL-SC

MOUNTING: RECESSED

ELECTRICAL VALUES: 120.0VAC, 0.4152A, 49.79W

### 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	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	
5	1697	1705	1703	1705	1703	1705	1703	1705	1697	1705	1703	1705	1703	1705	1703	1705	161.9
15	1631	1640	1644	1651	1652	1651	1644	1640	1631	1640	1644	1651	1652	1651	1644	1640	464.2
25	1495	1512	1532	1554	1560	1554	1532	1512	1495	1512	1532	1554	1560	1554	1532	1512	706.0
35	1294	1323	1372	1415	1429	1415	1372	1323	1294	1323	1372	1415	1429	1415	1372	1323	855.5
45	1034	1084	1162	1221	1241	1221	1162	1084	1034	1084	1162	1221	1241	1221	1162	1084	887.1
55	745	808	901	961	974	961	901	808	745	808	901	961	974	961	901	808	787.6
65	464	527	605	617	611	617	605	527	464	527	605	617	611	617	605	527	564.3
75	224	265	286	260	245	260	286	265	224	265	286	260	245	260	286	265	279.1
85	51	53	45	36	34	36	45	53	51	53	45	36	34	36	45	53	56.1
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	0.0

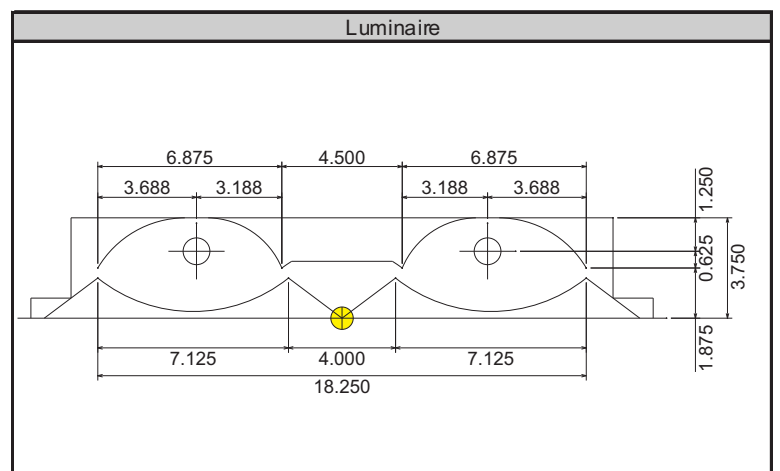
### Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1332.1	23.4%	28.0%
0-40	2187.6	38.4%	45.9%
0-60	3862.2	67.8%	81.1%
0-90	4761.6	83.5%	100.0%
90-180	0.0	0.0%	0.0%
0-180	4761.6	83.5%	100.0%

Total luminaire efficiency: 83.5%

CIE Type: Direct  
 Spacing Criterion: 0 deg: 1.22    90 deg: 1.31  
   180 deg: 1.22    270 deg: 1.31

Total reflectance of paint: 89.8



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	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711
5	1697	1705	1703	1705	1703	1705	1703	1705	1697	1705	1703	1705	1703	1705	1703	1705
10	1672	1681	1681	1684	1683	1684	1681	1681	1672	1681	1681	1684	1683	1684	1681	1681
15	1631	1640	1644	1651	1652	1651	1644	1640	1631	1640	1644	1651	1652	1651	1644	1640
20	1572	1585	1596	1609	1612	1609	1596	1585	1572	1585	1596	1609	1612	1609	1596	1585
25	1495	1512	1532	1554	1560	1554	1532	1512	1495	1512	1532	1554	1560	1554	1532	1512
30	1401	1425	1458	1490	1500	1490	1458	1425	1401	1425	1458	1490	1500	1490	1458	1425
35	1294	1323	1372	1415	1429	1415	1372	1323	1294	1323	1372	1415	1429	1415	1372	1323
40	1171	1208	1272	1326	1344	1326	1272	1208	1171	1208	1272	1326	1344	1326	1272	1208
45	1034	1084	1162	1221	1241	1221	1162	1084	1034	1084	1162	1221	1241	1221	1162	1084
50	892	948	1038	1100	1121	1100	1038	948	892	948	1038	1100	1121	1100	1038	948
55	745	808	901	961	974	961	901	808	745	808	901	961	974	961	901	808
60	601	665	757	801	803	801	757	665	601	665	757	801	803	801	757	665
65	464	527	605	617	611	617	605	527	464	527	605	617	611	617	605	527
70	336	391	438	431	415	431	438	391	336	391	438	431	415	431	438	391
75	224	265	286	260	245	260	286	265	224	265	286	260	245	260	286	265
80	128	149	148	125	117	125	148	149	128	149	148	125	117	125	148	149
85	51	53	45	36	34	36	45	53	51	53	45	36	34	36	45	53
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	40.8	45-50	439.3	90-95	0.0	135-140	0.0
5-10	121.1	50-55	414.7	95-100	0.0	140-145	0.0
10-15	197.3	55-60	372.8	100-105	0.0	145-150	0.0
15-20	267.0	60-65	316.4	105-110	0.0	150-155	0.0
20-25	327.9	65-70	247.8	110-115	0.0	155-160	0.0
25-30	378.1	70-75	174.2	115-120	0.0	160-165	0.0
30-35	415.9	75-80	104.8	120-125	0.0	165-170	0.0
35-40	439.6	80-85	47.4	125-130	0.0	170-175	0.0
40-45	447.8	85-90	8.7	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	1.019	1.019	1.019	1.019	0.994	0.994	0.994	0.994	0.971	0.971	0.971	0.971
1	0.936	0.894	0.856	0.822	0.912	0.874	0.839	0.808	0.89	0.855	0.824	0.795
2	0.854	0.78	0.72	0.669	0.831	0.764	0.708	0.661	0.809	0.748	0.697	0.653
3	0.78	0.685	0.613	0.556	0.758	0.671	0.604	0.551	0.737	0.658	0.596	0.546
4	0.714	0.607	0.529	0.471	0.694	0.595	0.523	0.467	0.675	0.584	0.516	0.464
5	0.657	0.542	0.462	0.405	0.638	0.532	0.457	0.402	0.621	0.522	0.452	0.4
6	0.606	0.487	0.408	0.353	0.589	0.479	0.404	0.351	0.573	0.471	0.401	0.35
7	0.562	0.441	0.364	0.311	0.546	0.434	0.361	0.31	0.532	0.427	0.358	0.309
8	0.522	0.402	0.328	0.277	0.508	0.396	0.325	0.276	0.495	0.39	0.322	0.275
9	0.487	0.368	0.297	0.249	0.475	0.363	0.295	0.249	0.463	0.358	0.293	0.248
10	0.456	0.339	0.271	0.226	0.445	0.335	0.269	0.225	0.434	0.331	0.267	0.225

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	0.928	0.928	0.928	0.928	0.889	0.889	0.889	0.852	0.852	0.852	0.835
1	0.848	0.82	0.794	0.77	0.787	0.766	0.747	0.757	0.74	0.725	0.707
2	0.769	0.718	0.675	0.638	0.691	0.655	0.624	0.666	0.636	0.61	0.592
3	0.7	0.633	0.58	0.536	0.61	0.565	0.527	0.589	0.551	0.518	0.5
4	0.64	0.563	0.504	0.458	0.544	0.493	0.451	0.526	0.482	0.445	0.427
5	0.589	0.505	0.443	0.396	0.488	0.434	0.391	0.473	0.425	0.387	0.37
6	0.544	0.456	0.393	0.346	0.442	0.386	0.343	0.428	0.379	0.34	0.323
7	0.505	0.414	0.352	0.307	0.402	0.346	0.304	0.391	0.34	0.302	0.285
8	0.471	0.379	0.318	0.274	0.369	0.313	0.272	0.359	0.308	0.27	0.254
9	0.441	0.349	0.289	0.247	0.34	0.285	0.245	0.331	0.281	0.244	0.229
10	0.415	0.322	0.264	0.224	0.314	0.261	0.223	0.307	0.257	0.222	0.207

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

	0	45	90
0	2672	2672	2672
45	2285	2566	2742
55	2029	2455	2651
65	1715	2237	2258
75	1352	1726	1481
85	907	809	612

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.

