



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: 16728

DATE: 09-25-2009

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-NPW4-MN-232-UNV-11L

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, CLEAR PRISMATIC PLASTIC LENS WITH LINEAR PRISMATIC SIDES.

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: SURFACE

ELECTRICAL VALUES: 120.0VAC, 0.3944A, 47.26W

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	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	
5	1436	1439	1453	1455	1459	1455	1453	1439	1436	1439	1453	1455	1459	1455	1453	1439	139.0
15	1401	1431	1512	1575	1602	1575	1512	1431	1401	1431	1512	1575	1602	1575	1512	1431	427.4
25	1332	1403	1567	1653	1676	1653	1567	1403	1332	1403	1567	1653	1676	1653	1567	1403	705.3
35	1214	1317	1470	1510	1511	1510	1470	1317	1214	1317	1470	1510	1511	1510	1470	1317	882.3
45	1024	1101	1206	1210	1226	1210	1206	1101	1024	1101	1206	1210	1226	1210	1206	1101	891.8
55	648	730	839	871	855	871	839	730	648	730	839	871	855	871	839	730	716.2
65	317	417	540	563	552	563	540	417	317	417	540	563	552	563	540	417	487.8
75	168	219	324	366	394	366	324	219	168	219	324	366	394	366	324	219	316.5
85	56	93	165	229	264	229	165	93	56	93	165	229	264	229	165	93	177.0
90	2	44	110	161	185	161	110	44	2	44	110	161	185	161	110	44	
95	1	35	88	133	151	133	88	35	1	35	88	133	151	133	88	35	90.7
105	4	23	58	84	93	84	58	23	4	23	58	84	93	84	58	23	56.5
115	6	9	40	54	60	54	40	9	6	9	40	54	60	54	40	9	34.3
125	7	8	26	43	48	43	26	8	7	8	26	43	48	43	26	8	23.0
135	8	8	11	24	31	24	11	8	8	8	11	24	31	24	11	8	12.2
145	8	8	12	11	13	11	12	8	8	8	12	11	13	11	12	8	6.6
155	7	8	7	11	12	11	7	8	7	8	7	11	12	11	7	8	4.3
165	8	8	9	9	8	9	9	8	8	8	9	9	8	9	9	8	2.3
175	8	8	8	8	7	8	8	8	8	8	8	8	7	8	8	8	0.8
180	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	

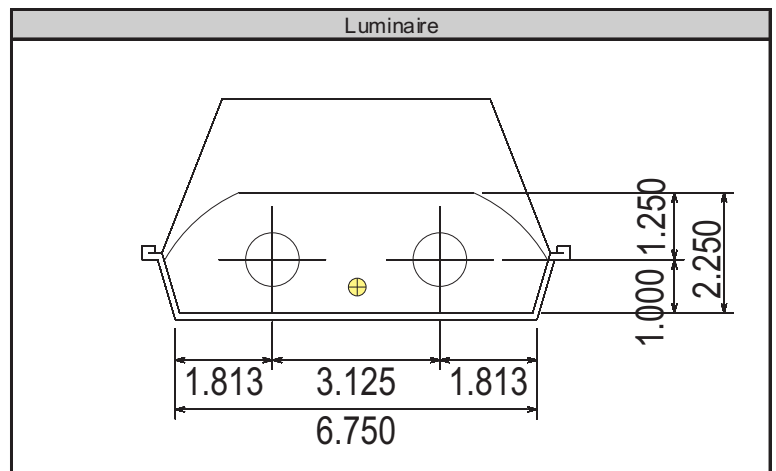
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1271.7	22.3%	25.6%
0-40	2153.9	37.8%	43.3%
0-60	3762.0	66.0%	75.6%
0-90	4743.3	83.2%	95.4%
90-180	230.6	4.0%	4.6%
0-180	4973.9	87.3%	100.0%

Total luminaire efficiency: 87.3%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.32 90 deg: 1.53
180 deg: 1.32 270 deg: 1.53



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	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442	1442
5	1436	1439	1453	1455	1459	1455	1453	1439	1436	1439	1453	1455	1459	1455	1453	1439
10	1424	1436	1475	1503	1516	1503	1475	1436	1424	1436	1475	1503	1516	1503	1475	1436
15	1401	1431	1512	1575	1602	1575	1512	1431	1401	1431	1512	1575	1602	1575	1512	1431
20	1372	1421	1549	1639	1671	1639	1549	1421	1372	1421	1549	1639	1671	1639	1549	1421
25	1332	1403	1567	1653	1676	1653	1567	1403	1332	1403	1567	1653	1676	1653	1567	1403
30	1280	1370	1541	1606	1621	1606	1541	1370	1280	1370	1541	1606	1621	1606	1541	1370
35	1214	1317	1470	1510	1511	1510	1470	1317	1214	1317	1470	1510	1511	1510	1470	1317
40	1133	1228	1359	1367	1361	1367	1359	1228	1133	1228	1359	1367	1361	1367	1359	1228
45	1024	1101	1206	1210	1226	1210	1206	1101	1024	1101	1206	1210	1226	1210	1206	1101
50	870	927	1025	1052	1068	1052	1025	927	870	927	1025	1052	1068	1052	1025	927
55	648	730	839	871	855	871	839	730	648	730	839	871	855	871	839	730
60	444	558	681	699	676	699	681	558	444	558	681	699	676	699	681	558
65	317	417	540	563	552	563	540	417	317	417	540	563	552	563	540	417
70	231	303	422	453	456	453	422	303	231	303	422	453	456	453	422	303
75	168	219	324	366	394	366	324	219	168	219	324	366	394	366	324	219
80	116	150	238	294	336	294	238	150	116	150	238	294	336	294	238	150
85	56	93	165	229	264	229	165	93	56	93	165	229	264	229	165	93
90	2	44	110	161	185	161	110	44	2	44	110	161	185	161	110	44
95	1	35	88	133	151	133	88	35	1	35	88	133	151	133	88	35
100	2	28	70	103	117	103	70	28	2	28	70	103	117	103	70	28
105	4	23	58	84	93	84	58	23	4	23	58	84	93	84	58	23
110	5	17	47	66	75	66	47	17	5	17	47	66	75	66	47	17
115	6	9	40	54	60	54	40	9	6	9	40	54	60	54	40	9
120	6	6	34	48	52	48	34	6	6	6	34	48	52	48	34	6
125	7	8	26	43	48	43	26	8	7	8	26	43	48	43	26	8
130	7	9	16	35	40	35	16	9	7	9	16	35	40	35	16	9
135	8	8	11	24	31	24	11	8	8	8	11	24	31	24	11	8
140	8	7	10	14	20	14	10	7	8	7	10	14	20	14	10	7
145	8	8	12	11	13	11	12	8	8	8	12	11	13	11	12	8
150	8	8	10	13	13	13	10	8	8	8	10	13	13	13	10	8
155	7	8	7	11	12	11	7	8	7	8	7	11	12	11	7	8
160	8	8	8	7	8	7	8	8	8	8	8	7	8	7	8	8
165	8	8	9	9	8	9	9	8	8	8	9	9	8	9	9	8
170	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
175	8	8	8	8	7	8	8	8	8	8	8	8	7	8	8	8
180	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	34.6	45-50	435.7	90-95	50.5	135-140	4.9
5-10	104.4	50-55	389.4	95-100	40.1	140-145	3.6
10-15	176.6	55-60	326.8	100-105	31.5	145-150	3.0
15-20	250.8	60-65	268.9	105-110	24.9	150-155	2.5
20-25	322.0	65-70	218.9	110-115	19.1	155-160	1.8
25-30	383.3	70-75	176.6	115-120	15.2	160-165	1.3
30-35	428.8	75-80	139.9	120-125	12.7	165-170	1.0
35-40	453.5	80-85	105.9	125-130	10.3	170-175	0.6
40-45	456.1	85-90	71.1	130-135	7.3	175-180	0.2



Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.059	1.059	1.059	1.059	1.029	1.029	1.029	1.029	1.001	1.001	1.001	1.001
1	0.965	0.917	0.875	0.836	0.936	0.892	0.854	0.819	0.908	0.868	0.833	0.801
2	0.88	0.799	0.734	0.679	0.851	0.779	0.718	0.668	0.825	0.759	0.703	0.657
3	0.803	0.702	0.625	0.564	0.777	0.685	0.613	0.556	0.752	0.668	0.602	0.549
4	0.736	0.622	0.54	0.478	0.712	0.607	0.53	0.472	0.688	0.593	0.521	0.466
5	0.677	0.555	0.471	0.411	0.654	0.542	0.464	0.406	0.633	0.53	0.457	0.402
6	0.625	0.499	0.416	0.358	0.604	0.488	0.41	0.354	0.585	0.478	0.404	0.351
7	0.578	0.451	0.371	0.315	0.56	0.442	0.366	0.312	0.542	0.433	0.361	0.31
8	0.537	0.411	0.333	0.28	0.52	0.403	0.329	0.278	0.504	0.395	0.325	0.276
9	0.501	0.376	0.301	0.251	0.486	0.369	0.297	0.249	0.471	0.362	0.294	0.247
10	0.469	0.346	0.274	0.226	0.455	0.34	0.271	0.225	0.442	0.334	0.268	0.223

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.947	0.947	0.947	0.947	0.898	0.898	0.898	0.853	0.853	0.853	0.832
1	0.855	0.824	0.795	0.769	0.783	0.759	0.738	0.745	0.726	0.709	0.688
2	0.775	0.721	0.675	0.635	0.686	0.648	0.615	0.654	0.623	0.595	0.574
3	0.705	0.636	0.58	0.534	0.606	0.559	0.519	0.579	0.54	0.506	0.485
4	0.646	0.566	0.504	0.456	0.541	0.488	0.445	0.517	0.472	0.435	0.415
5	0.594	0.507	0.443	0.394	0.486	0.43	0.386	0.466	0.417	0.378	0.359
6	0.549	0.458	0.393	0.345	0.439	0.382	0.339	0.422	0.372	0.333	0.314
7	0.51	0.416	0.351	0.305	0.4	0.342	0.3	0.385	0.334	0.295	0.277
8	0.475	0.38	0.317	0.272	0.366	0.309	0.267	0.353	0.302	0.263	0.246
9	0.444	0.349	0.287	0.244	0.337	0.281	0.241	0.325	0.274	0.237	0.221
10	0.417	0.322	0.262	0.221	0.311	0.257	0.218	0.301	0.251	0.215	0.199

Average Luminance Table (cd/m²)

	0	45	90
0	6332	6332	6332
45	6355	7112	6969
55	4959	5873	5686
65	3293	4827	4595
75	2848	4184	4564
85	2837	4053	5312

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.

