



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: 18186 DATE: 02-22-2010
 PREPARED FOR: RENOVA LIGHTING SYSTEMS
 CATALOG NUMBER: ECS-NPW4-MN-332-UNV-13L
 LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, CLEAR PRISMATIC PLASTIC LENS WITH LINEAR PRISMATIC SIDES.
 LAMP: THREE 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.
 LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO
 BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE3X32T8/UNV-ISL-SC
 MOUNTING: RECESSED
 ELECTRICAL VALUES: 120.0VAC, 0.5642A, 67.88W

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	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	
5	2329	2340	2355	2353	2361	2353	2355	2340	2329	2340	2355	2353	2361	2353	2355	2340	224.1
15	2267	2291	2347	2387	2410	2387	2347	2291	2267	2291	2347	2387	2410	2387	2347	2291	661.9
25	2133	2164	2259	2298	2318	2298	2259	2164	2133	2164	2259	2298	2318	2298	2259	2164	1031.0
35	1898	1916	2021	2086	2089	2086	2021	1916	1898	1916	2021	2086	2089	2086	2021	1916	1250.1
45	1501	1514	1655	1641	1638	1641	1655	1514	1501	1514	1655	1641	1638	1641	1655	1514	1225.5
55	860	980	1150	1179	1185	1179	1150	980	860	980	1150	1179	1185	1179	1150	980	972.7
65	463	558	737	825	841	825	737	558	463	558	737	825	841	825	737	558	691.7
75	266	312	451	560	598	560	451	312	266	312	451	560	598	560	451	312	465.5
85	90	137	244	328	352	328	244	137	90	137	244	328	352	328	244	137	254.1
90	1	61	158	218	237	218	158	61	1	61	158	218	237	218	158	61	
95	2	47	121	168	184	168	121	47	2	47	121	168	184	168	121	47	118.6
105	6	29	72	103	115	103	72	29	6	29	72	103	115	103	72	29	70.3
115	9	11	47	66	73	66	47	11	9	11	47	66	73	66	47	11	41.6
125	10	10	28	47	52	47	28	10	10	10	28	47	52	47	28	10	26.0
135	11	12	11	25	31	25	11	12	11	12	11	25	31	25	11	12	13.6
145	11	10	14	12	13	12	14	10	11	10	14	12	13	12	14	10	7.7
155	11	11	10	15	15	15	10	11	11	11	10	15	15	15	10	11	5.6
165	11	11	12	12	12	12	12	11	11	11	12	12	12	12	12	11	3.1
175	11	11	11	11	10	11	11	11	11	11	11	11	10	11	11	11	1.0
180	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	

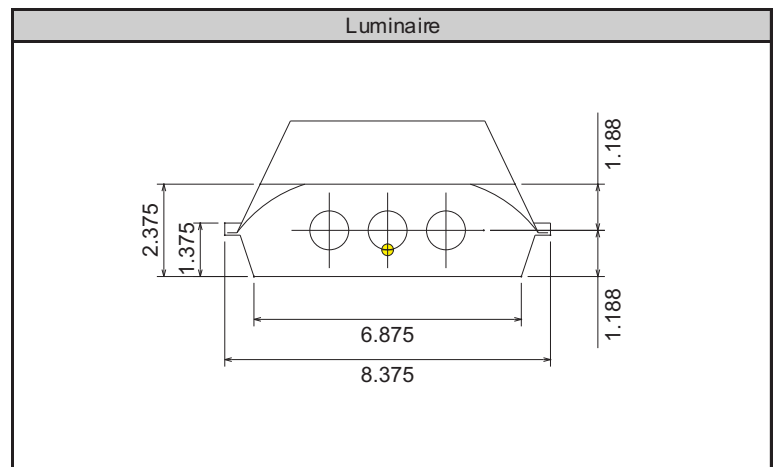
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1917.0	22.4%	27.1%
0-40	3167.1	37.0%	44.8%
0-60	5365.3	62.8%	76.0%
0-90	6776.6	79.3%	95.9%
90-180	287.4	3.4%	4.1%
0-180	7064.0	82.6%	100.0%

Total luminaire efficiency: 82.6%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.28 90 deg: 1.38
 180 deg: 1.28 270 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	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347	2347
5	2329	2340	2355	2353	2361	2353	2355	2340	2329	2340	2355	2353	2361	2353	2355	2340
10	2306	2324	2353	2367	2382	2367	2353	2324	2306	2324	2353	2367	2382	2367	2353	2324
15	2267	2291	2347	2387	2410	2387	2347	2291	2267	2291	2347	2387	2410	2387	2347	2291
20	2209	2240	2323	2372	2395	2372	2323	2240	2209	2240	2323	2372	2395	2372	2323	2240
25	2133	2164	2259	2298	2318	2298	2259	2164	2133	2164	2259	2298	2318	2298	2259	2164
30	2030	2059	2150	2208	2235	2208	2150	2059	2030	2059	2150	2208	2235	2208	2150	2059
35	1898	1916	2021	2086	2089	2086	2021	1916	1898	1916	2021	2086	2089	2086	2021	1916
40	1729	1736	1866	1885	1877	1885	1866	1736	1729	1736	1866	1885	1877	1885	1866	1736
45	1501	1514	1655	1641	1638	1641	1655	1514	1501	1514	1655	1641	1638	1641	1655	1514
50	1194	1250	1402	1396	1404	1396	1402	1250	1194	1250	1402	1396	1404	1396	1402	1250
55	860	980	1150	1179	1185	1179	1150	980	860	980	1150	1179	1185	1179	1150	980
60	616	744	925	987	993	987	925	744	616	744	925	987	993	987	925	744
65	463	558	737	825	841	825	737	558	463	558	737	825	841	825	737	558
70	350	422	582	688	709	688	582	422	350	422	582	688	709	688	582	422
75	266	312	451	560	598	560	451	312	266	312	451	560	598	560	451	312
80	186	220	342	443	484	443	342	220	186	220	342	443	484	443	342	220
85	90	137	244	328	352	328	244	137	90	137	244	328	352	328	244	137
90	1	61	158	218	237	218	158	61	1	61	158	218	237	218	158	61
95	2	47	121	168	184	168	121	47	2	47	121	168	184	168	121	47
100	4	37	94	131	144	131	94	37	4	37	94	131	144	131	94	37
105	6	29	72	103	115	103	72	29	6	29	72	103	115	103	72	29
110	7	21	56	80	89	80	56	21	7	21	56	80	89	80	56	21
115	9	11	47	66	73	66	47	11	9	11	47	66	73	66	47	11
120	10	8	38	56	63	56	38	8	10	8	38	56	63	56	38	8
125	10	10	28	47	52	47	28	10	10	10	28	47	52	47	28	10
130	11	12	18	37	43	37	18	12	11	12	18	37	43	37	18	12
135	11	12	11	25	31	25	11	12	11	12	11	25	31	25	11	12
140	11	9	11	15	19	15	11	9	11	9	11	15	19	15	11	9
145	11	10	14	12	13	12	14	10	11	10	14	12	13	12	14	10
150	11	11	14	15	14	15	14	11	11	11	14	15	14	15	14	11
155	11	11	10	15	15	15	10	11	11	11	10	15	15	15	10	11
160	11	11	11	10	11	10	11	11	11	11	11	10	11	10	11	11
165	11	11	12	12	12	12	12	11	11	11	12	12	12	12	12	11
170	11	10	11	11	11	11	11	10	11	10	11	11	11	11	11	10
175	11	11	11	11	10	11	11	11	11	11	11	11	10	11	11	11
180	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	56.1	45-50	591.8	90-95	66.8	135-140	5.5
5-10	168.0	50-55	524.7	95-100	51.8	140-145	4.1
10-15	278.2	55-60	448.0	100-105	39.9	145-150	3.6
15-20	383.7	60-65	376.9	105-110	30.3	150-155	3.2
20-25	477.3	65-70	314.8	110-115	23.3	155-160	2.4
25-30	553.7	70-75	258.9	115-120	18.3	160-165	1.7
30-35	610.7	75-80	206.6	120-125	14.6	165-170	1.3
35-40	639.4	80-85	154.2	125-130	11.4	170-175	0.8
40-45	633.7	85-90	99.9	130-135	8.1	175-180	0.3



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	1.003	1.003	1.003	1.003	0.976	0.976	0.976	0.976	0.949	0.949	0.949	0.949
1	0.915	0.869	0.829	0.793	0.887	0.846	0.81	0.777	0.861	0.824	0.791	0.761
2	0.834	0.759	0.697	0.645	0.808	0.739	0.683	0.635	0.783	0.721	0.669	0.625
3	0.763	0.668	0.595	0.538	0.738	0.651	0.584	0.531	0.715	0.636	0.574	0.524
4	0.7	0.593	0.515	0.457	0.677	0.579	0.507	0.452	0.656	0.566	0.499	0.447
5	0.644	0.53	0.451	0.394	0.624	0.518	0.445	0.39	0.604	0.507	0.438	0.387
6	0.595	0.477	0.4	0.345	0.576	0.467	0.394	0.342	0.558	0.458	0.389	0.339
7	0.552	0.433	0.357	0.305	0.535	0.424	0.353	0.302	0.518	0.416	0.348	0.3
8	0.514	0.395	0.321	0.272	0.498	0.387	0.318	0.27	0.483	0.38	0.314	0.268
9	0.479	0.362	0.292	0.244	0.465	0.356	0.288	0.243	0.452	0.349	0.285	0.241
10	0.449	0.334	0.266	0.221	0.436	0.328	0.263	0.22	0.424	0.323	0.261	0.219

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	0.899	0.899	0.899	0.899	0.854	0.854	0.854	0.812	0.812	0.812	0.793
1	0.813	0.783	0.756	0.731	0.745	0.723	0.702	0.71	0.692	0.676	0.656
2	0.737	0.686	0.643	0.605	0.654	0.618	0.586	0.624	0.595	0.568	0.549
3	0.672	0.606	0.554	0.51	0.579	0.535	0.497	0.554	0.516	0.484	0.465
4	0.616	0.541	0.483	0.437	0.517	0.468	0.428	0.496	0.453	0.418	0.399
5	0.568	0.486	0.426	0.379	0.466	0.414	0.372	0.448	0.402	0.365	0.347
6	0.525	0.44	0.379	0.333	0.423	0.369	0.328	0.407	0.359	0.322	0.305
7	0.489	0.4	0.34	0.296	0.385	0.331	0.291	0.372	0.324	0.287	0.27
8	0.456	0.367	0.307	0.264	0.354	0.3	0.261	0.342	0.293	0.257	0.241
9	0.427	0.337	0.279	0.238	0.326	0.273	0.235	0.316	0.268	0.233	0.217
10	0.402	0.312	0.255	0.216	0.302	0.25	0.214	0.293	0.246	0.211	0.197

Average Luminance Table (cd/m²)

	0	45	90
0	9050	9050	9050
45	8184	8732	8262
55	5783	7140	6915
65	4220	5764	6040
75	3962	4969	5825
85	3983	4802	5574

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.

