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THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL78291

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ISSUE DATE: 08/21/13

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: MLS5-I1/D1-4-PB-120-T5

LUMINAIRE: EXTRUDED 2-PIECE METAL HOUSING WITH WHITE PAINTED GENERAL INTERIOR FINISH, FABRICATED WHITE PAINTED METAL END CAPS AND 2 DISTINCT OPTICAL COMPARTMENTS, TOP OPTICAL COMPARTMENT CONSISTS OF: FORMED WHITE PAINTED METAL REFLECTOR, FORMED SPECULAR METAL SOCKET MOUNTING BRACKETS. BOTTOM OPTICAL COMPARTMENT CONSISTS OF: FORMED WHITE PAINTED METAL REFLECTOR AND SOCKET MOUNTING BRACKETS, FABRICATED SEMI-DIFFUSE METAL PARABOLIC 31-CELL LOUVER. OPEN TOP.

LAMPS: TWO 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENTS.

BALLAST: UNIVERSAL B228PUNV-C, UNIVERSAL B228PUNV-N

THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.

TOTAL REFLECTANCE OF PAINT = 89.2 %

MOUNTING: SUSPENDED

TOTAL INPUT WATTS = 63.9 AT 120.0 VOLTS

REPORT IS BASED ON 2600 LUMENS PER LAMP. *

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	714	714	714	714	714	
5	713	707	713	715	713	68
15	676	676	695	713	718	197
25	615	626	671	724	750	313
35	542	570	655	761	827	419
45	450	509	642	792	890	499
55	319	395	498	564	599	415
65	99	115	154	168	183	153
75	12	14	18	28	31	26
85	2	2	2	3	4	3
90	0	0	0	0	0	
95	18	28	30	32	33	37
105	113	240	222	175	157	205
115	230	347	446	464	469	392
125	347	425	541	610	627	459
135	451	497	585	651	674	444
145	540	564	624	669	683	387
155	610	618	651	677	686	300
165	657	656	671	679	681	189
175	679	674	679	679	679	65
180	680	680	680	680	680	

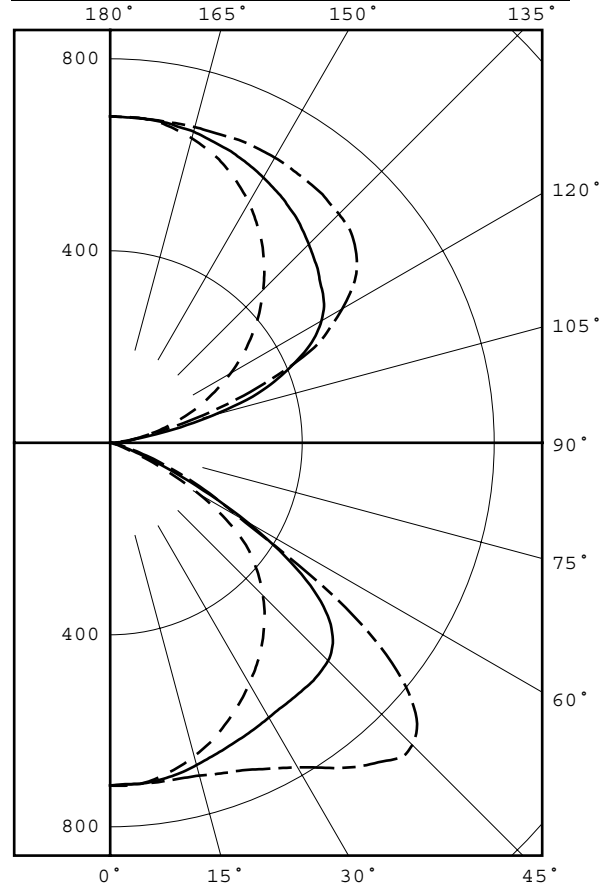
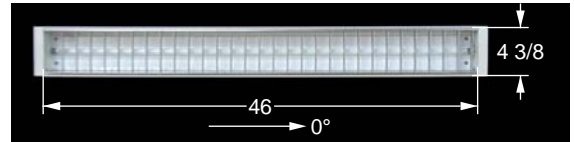
ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	577	11.1	12.6
0- 40	997	19.2	21.8
0- 60	1911	36.7	41.8
0- 90	2093	40.3	45.8
90-120	634	12.2	13.9
90-130	1093	21.0	23.9
90-150	1924	37.0	42.1
90-180	2478	47.6	54.2
0-180	4571	87.9	100.0

TOTAL LUMINAIRE EFFICIENCY = 87.9 % *

CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.21 1.83
SHIELDING ANGLES : 27 29

* SEE ADDENDUM FOR FURTHER INFORMATION



LEGEND:
0-deg ---
45-deg ==
90-deg - - -

Checked M KLOPF
Approved R BEATTIE
Lighting Engineer



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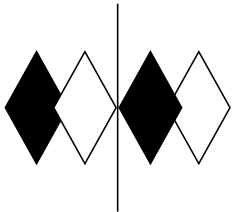
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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 46.000 4.375

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	4901.	6993.	9694.
55	4283.	6687.	8043.
65	1804.	2807.	3335.
75	357.	536.	922.
85	177.	177.	353.



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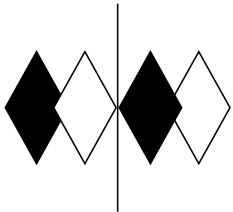
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CANDELA DISTRIBUTION
 LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	714	714	714	714	714
5.0	713	707	713	715	713
10.0	698	695	707	714	714
15.0	676	676	695	713	718
20.0	649	654	682	717	730
25.0	615	626	671	724	750
30.0	579	596	661	737	781
35.0	542	570	655	761	827
40.0	499	542	652	784	869
45.0	450	509	642	792	890
50.0	393	465	602	728	812
55.0	319	395	498	564	599
60.0	214	268	328	315	309
65.0	99	115	154	168	183
70.0	31	37	52	78	88
75.0	12	14	18	28	31
80.0	5	6	8	9	11
85.0	2	2	2	3	4
90.0	0	0	0	0	0
95.0	18	28	30	32	33
100.0	59	142	85	63	61
105.0	113	240	222	175	157
110.0	171	308	356	330	311
115.0	230	347	446	464	469
120.0	290	386	508	550	558
125.0	347	425	541	610	627
130.0	401	462	564	639	661
135.0	451	497	585	651	674
140.0	498	533	607	662	681
145.0	540	564	624	669	683
150.0	578	593	638	675	686
155.0	610	618	651	677	686
160.0	637	639	661	678	682
165.0	657	656	671	679	681
170.0	672	668	677	679	679
175.0	679	674	679	679	679
180.0	680	680	680	680	680



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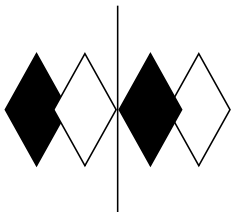
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5-DEGREE
 ZONAL LUMEN SUMMARY

0- 5	17
5- 10	51
10- 15	83
15- 20	114
20- 25	143
25- 30	170
30- 35	197
35- 40	223
40- 45	245
45- 50	254
50- 55	236
55- 60	178
60- 65	104
65- 70	49
70- 75	19
75- 80	7
80- 85	3
85- 90	1
90- 95	7
95-100	30
100-105	73
105-110	132
110-115	181
115-120	212
120-125	228
125-130	231
130-135	227
135-140	217
140-145	203
145-150	184
150-155	162
155-160	137
160-165	109
165-170	80
170-175	48
175-180	16

10-DEGREE
 ZONAL LUMEN SUMMARY

0- 10	68
0- 20	265
0- 30	577
0- 40	997
0- 50	1496
0- 60	1911
0- 70	2064
0- 80	2090
0- 90	2093
0-100	2130
0-110	2335
0-120	2728
0-130	3187
0-140	3631
0-150	4018
0-160	4317
0-170	4506
0-180	4571



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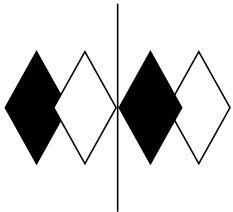
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0	
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	93	93	93	93	86	86	86	86	71	71	71	58	58	58	46	46	46	40	
1	86	82	79	76	79	76	73	71	63	61	60	52	51	50	42	41	40	35	
2	78	72	67	63	72	67	62	59	56	53	50	46	44	42	37	36	34	30	
3	72	64	58	53	66	59	53	49	50	46	42	41	38	36	33	31	29	26	
4	66	56	50	45	60	52	46	42	44	40	36	36	33	31	29	27	25	22	
5	60	50	43	38	55	46	40	36	39	35	31	33	29	26	26	24	22	19	
6	55	45	38	33	51	41	35	31	35	30	27	29	26	23	24	21	19	17	
7	51	40	33	29	47	37	31	27	32	27	24	27	23	20	22	19	17	15	
8	47	36	30	25	43	34	28	24	29	24	21	24	21	18	20	17	15	13	
9	44	33	27	22	40	31	25	21	26	22	18	22	19	16	18	15	13	12	
10	41	30	24	20	37	28	23	19	24	20	16	20	17	14	17	14	12	10	

ALL CANDELA, LUMENS, LUMINANCE, COEFFICIENT OF UTILIZATION AND VCP VALUES IN THIS REPORT ARE BASED ON RELATIVE PHOTOMETRY WHICH ASSUMES A BALLAST FACTOR OF 1.000. ANY CALCULATIONS PREPARED FROM THESE DATA SHOULD INCLUDE AN APPROPRIATE BALLAST FACTOR.



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ADDENDUM

SPECIAL TEST PROCEDURES FOR T-5 LAMPS INCLUDING EXPLANATION OF THE IMPORTANCE OF LAMP LUMEN RATINGS.

This test was performed using standard relative photometric practices in accordance with recommendations of the Illuminating Engineering Society of North America. Fluorescent testing using the guidelines of relative photometric practice presupposes that the lamps will be operated at their nominal electrical characteristics (e.g., a 40 watt lamp will operate very nearly at 40 watts, and at the voltage and current required for 40-watt operation). Fluorescent lamps in general are temperature sensitive, the lumen output varies with ambient temperature and follows a characteristic curve. The T-5 fluorescent lamps used in this test produce maximum light output in an ambient temperature other than 25 degrees C. A critical step in relative photometric testing involves measurement of the total flux output from the lamp(s) suspended in free air at a 25 degree C ambient temperature per IES LM41-1998. This measurement process is a separate step from the photometric exploration of the luminaire itself. This "bare lamp" measurement is made with the lamp(s) operated by the same ballast(s) which are to be used in the luminaire. Since the test procedure involves measuring the bare lamp flux output at 25 degrees C and this lamp type peaks at a temperature other than 25 degrees C, the flux measured for this lamp type will be less than the maximum output the lamp is designed to produce.

As a result, the measurement of the "bare lamp" total flux output is lower than it would be if the lamps were operated at their optimum operating temperature and at nominal electrical characteristics. When this "bare lamp" measurement is incorporated into the luminaire test report, the net effect is that total luminaire efficiency on the report is higher than what the lighting industry would expect this luminaire to produce. These lighting industry expectations are based on comparisons to the total luminaire efficiency of the same luminaire with T-12 or T-8 lamps.

On this particular test, the lamp lumen rating shown is for a 25 degree C ambient temperature. Since this report was based on the lamp lumen rating at 25 degrees C, the candela values in this report should be accurate, as long as the lamp(s) used for this test follow the manufacturer's light output vs. temperature curve.

T5TEMP3.DIS