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THE LIGHT CENTER OF THE INDUSTRY SINCE 1955
INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA
PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL76161 PAGE: 1 OF 5
ISSUE DATE: 02/13/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING
CATALOG NUMBER: MLS5-D1-4-X-TWA-120-T5
LUMINAIRE: EXTRUDED METAL HOUSING WITH WHITE PAINTED GENERAL INTERIOR FINISH AND FABRICATED WHITE PAINTED METAL END CAPS, FORMED WHITE PAINTED METAL REFLECTOR AND SOCKET MOUNTING BRACKETS, EXTRUDED TRANSLUCENT WHITE FROSTED ACRYLIC DIFFUSER. DIFFUSER FROSTED BOTH SIDES.
LAMP: ONE 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENT.
BALLAST: UNIVERSAL B228PUNV-C
MOUNTING: RECESSED
TOTAL REFLECTANCE OF PAINT = 89.1 %
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMP.
TOTAL INPUT WATTS = 30.8 AT 120.0 VOLTS
LUMEN TO CANDELA RATIO USED = 9.17
REPORT IS BASED ON 2600 LUMENS PER LAMP. *

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	673	673	673	673	673	
5	671	671	669	666	664	64
15	645	645	645	641	641	182
25	594	597	597	597	596	275
35	525	527	528	528	529	330
45	440	441	441	441	440	340
55	342	343	342	342	339	304
65	233	233	232	232	232	231
75	125	128	127	129	129	134
85	33	34	36	36	36	40
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	520	20.0	27.4
0- 40	850	32.7	44.7
0- 60	1494	57.5	78.7
0- 90	1900	73.1	100.0
90-180	0	0.0	0.0
0-180	1900	73.1	100.0

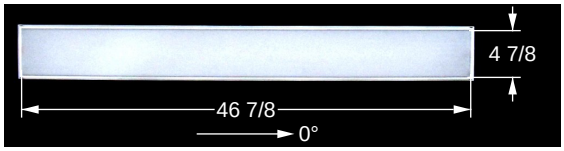
TOTAL LUMINAIRE EFFICIENCY = 73.1 % *

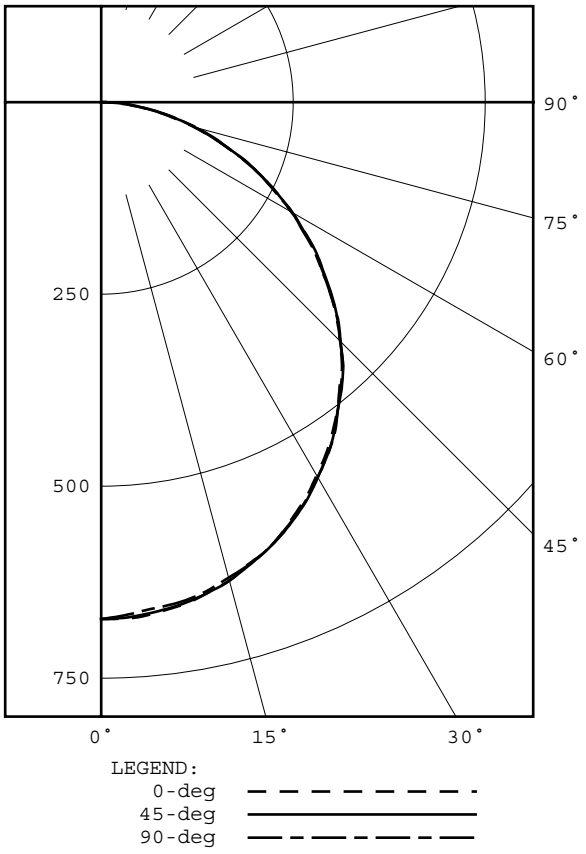
CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 1.24	1.25
SHIELDING ANGLES	: 90	90
LUMINOUS LENGTH	:46.875	4.875

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	4221.	4230.	4221.
55	4044.	4044.	4009.
65	3740.	3724.	3724.
75	3276.	3328.	3381.
85	2568.	2802.	2802.





Checked *M KLOPF*
Approved *R BEATTIE*
Lighting Engineer

* SEE ADDENDUM FOR FURTHER INFORMATION

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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	673	673	673	673	673
2.5	673	673	672	670	669
5.0	671	671	669	666	664
7.5	666	666	665	661	661
10.0	661	661	660	657	657
12.5	653	653	653	650	650
15.0	645	645	645	641	641
17.5	632	635	634	633	633
20.0	623	623	623	622	623
22.5	610	611	611	610	610
25.0	594	597	597	597	596
27.5	579	581	582	581	581
30.0	561	565	564	565	564
32.5	544	545	547	547	547
35.0	525	527	528	528	529
37.5	505	509	506	508	506
40.0	483	486	487	486	485
42.5	464	465	466	466	466
45.0	440	441	441	441	440
47.5	416	418	418	418	417
50.0	391	394	392	393	390
52.5	364	365	366	364	363
55.0	342	343	342	342	339
57.5	314	317	313	315	311
60.0	286	290	288	287	287
62.5	260	263	259	261	257
65.0	233	233	232	232	232
67.5	205	207	207	206	206
70.0	176	181	177	181	177
72.5	151	152	151	154	154
75.0	125	128	127	129	129
77.5	98	100	102	103	102
80.0	77	78	78	79	79
82.5	53	57	55	58	56
85.0	33	34	36	36	36
87.5	16	17	17	17	17
90.0	0	0	0	0	0

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5-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 5	16
5- 10	47
10- 15	77
15- 20	104
20- 25	128
25- 30	147
30- 35	161
35- 40	169
40- 45	172
45- 50	168
50- 55	159
55- 60	145
60- 65	126
65- 70	104
70- 75	80
75- 80	55
80- 85	31
85- 90	9

10-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 10	64
0- 20	245
0- 30	520
0- 40	850
0- 50	1190
0- 60	1494
0- 70	1725
0- 80	1860
0- 90	1900

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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	87	87	87	87	85	85	85	85	81	81	81	78	78	78	75	75	75	73
1	79	76	73	70	77	74	71	69	71	69	66	68	66	64	66	64	63	61
2	72	66	61	57	70	65	60	56	62	58	55	60	56	53	57	55	52	51
3	66	58	52	47	64	57	51	47	55	50	46	53	48	45	51	47	44	43
4	60	51	45	40	58	50	44	40	48	43	39	47	42	39	45	41	38	36
5	55	46	39	34	54	45	39	34	43	38	34	42	37	33	41	36	33	31
6	51	41	35	30	50	41	34	30	39	34	30	38	33	29	37	32	29	28
7	47	37	31	26	46	37	31	26	36	30	26	35	30	26	34	29	26	24
8	44	34	28	24	43	34	28	24	33	27	23	32	27	23	31	26	23	22
9	41	31	25	21	40	31	25	21	30	25	21	29	24	21	29	24	21	19
10	39	29	23	19	38	29	23	19	28	23	19	27	22	19	26	22	19	18

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 the lumen 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