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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: ITL78295

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ISSUE DATE: 08/24/13

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: MLS5-I2/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: THREE 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 = 89.9 %

MOUNTING: SUSPENDED/WALL

TOTAL INPUT WATTS = 96.4 AT 120.0 VOLTS

REPORT IS BASED ON 2600 LUMENS PER LAMP. *

CANDELA DISTRIBUTION

FLUX

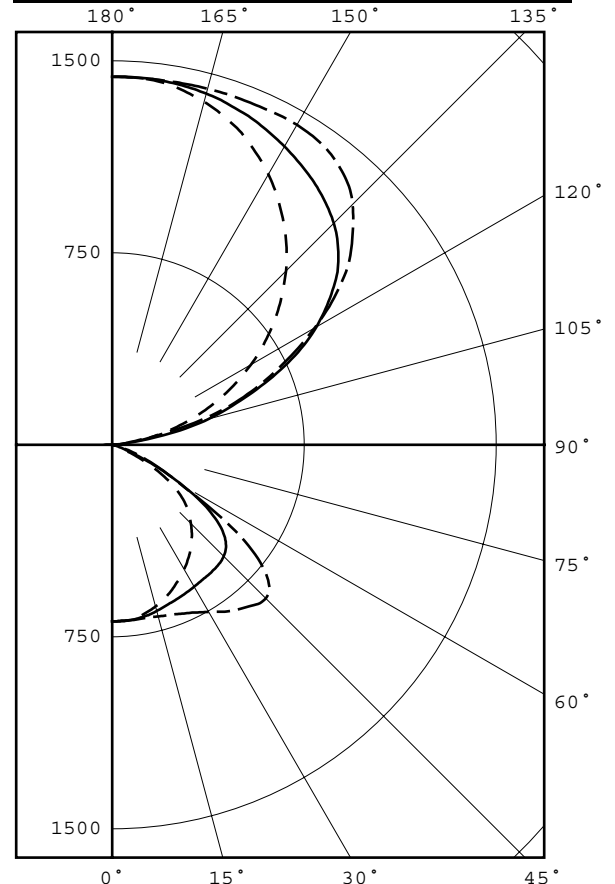
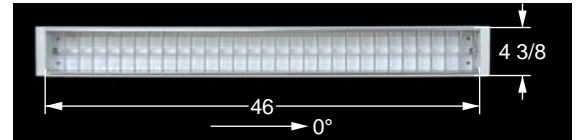
	0.0	22.5	45.0	67.5	90.0	
0	690	690	690	690	690	
5	689	682	689	690	689	65
15	654	653	672	689	694	190
25	595	604	649	700	724	302
35	525	552	633	732	794	404
45	435	492	616	753	848	479
55	307	381	481	544	589	402
65	96	115	153	164	179	151
75	12	15	19	29	32	27
85	2	2	3	3	4	3
90	0	0	0	0	0	
95	37	55	39	45	47	64
105	250	405	390	357	332	375
115	502	713	757	739	725	696
125	743	895	1051	1091	1088	880
135	960	1051	1224	1313	1328	911
145	1141	1195	1312	1404	1431	814
155	1287	1311	1376	1425	1442	633
165	1387	1390	1420	1437	1440	400
175	1436	1429	1438	1437	1437	137
180	1438	1438	1438	1438	1438	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	558	7.2	8.0
0- 40	962	12.3	13.9
0- 60	1843	23.6	26.6
0- 90	2024	26.0	29.2
90-120	1135	14.6	16.4
90-130	2015	25.8	29.1
90-150	3740	47.9	53.9
90-180	4910	62.9	70.8
0-180	6934	88.9	100.0

TOTAL LUMINAIRE EFFICIENCY = 88.9 % *

CIE TYPE - SEMI-INDIRECT
PLANE : 0-DEG 90-DEG
SHIELDING ANGLES : 27 29



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

Checked M KLOPF
Approved R BEATTIE
Lighting Engineer

* SEE ADDENDUM FOR FURTHER INFORMATION

THIS REPORT IS BASED ON PUBLISHED INDUSTRY PROCEDURES. FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE.



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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	4738.	6710.	9237.
55	4122.	6459.	7909.
65	1750.	2788.	3262.
75	357.	565.	952.
85	177.	265.	353.



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CANDELA DISTRIBUTION
 LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	690	690	690	690	690
5.0	689	682	689	690	689
10.0	675	672	683	690	689
15.0	654	653	672	689	694
20.0	627	631	659	693	705
25.0	595	604	649	700	724
30.0	562	577	640	713	754
35.0	525	552	633	732	794
40.0	483	525	628	748	825
45.0	435	492	616	753	848
50.0	381	450	577	699	784
55.0	307	381	481	544	589
60.0	207	262	320	311	309
65.0	96	115	153	164	179
70.0	30	38	52	76	88
75.0	12	15	19	29	32
80.0	5	6	8	10	12
85.0	2	2	3	3	4
90.0	0	0	0	0	0
95.0	37	55	39	45	47
100.0	132	226	183	125	106
105.0	250	405	390	357	332
110.0	375	573	567	561	546
115.0	502	713	757	739	725
120.0	625	813	921	924	913
125.0	743	895	1051	1091	1088
130.0	855	974	1153	1211	1222
135.0	960	1051	1224	1313	1328
140.0	1055	1126	1273	1371	1396
145.0	1141	1195	1312	1404	1431
150.0	1220	1258	1346	1418	1443
155.0	1287	1311	1376	1425	1442
160.0	1344	1354	1400	1432	1441
165.0	1387	1390	1420	1437	1440
170.0	1419	1414	1432	1438	1438
175.0	1436	1429	1438	1437	1437
180.0	1438	1438	1438	1438	1438



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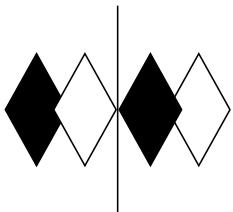
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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	16
5- 10	49
10- 15	80
15- 20	110
20- 25	138
25- 30	164
30- 35	190
35- 40	214
40- 45	235
45- 50	244
50- 55	228
55- 60	174
60- 65	103
65- 70	48
70- 75	19
75- 80	8
80- 85	3
85- 90	1
90- 95	11
95-100	52
100-105	139
105-110	236
110-115	316
115-120	380
120-125	427
125-130	453
130-135	460
135-140	451
140-145	425
145-150	388
150-155	343
155-160	290
160-165	232
165-170	169
170-175	102
175-180	34

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	65
0- 20	256
0- 30	558
0- 40	962
0- 50	1441
0- 60	1843
0- 70	1994
0- 80	2021
0- 90	2024
0-100	2088
0-110	2464
0-120	3159
0-130	4040
0-140	4951
0-150	5764
0-160	6397
0-170	6797
0-180	6934



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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	91	91	91	91	81	81	81	81	64	64	64	48	48	48	33	33	33	26	
1	83	80	76	74	74	72	69	67	56	55	53	43	41	40	30	29	29	23	
2	76	70	65	60	68	63	59	55	50	47	44	38	36	34	26	25	24	19	
3	69	61	55	50	62	55	50	46	44	40	37	33	31	29	23	22	21	17	
4	63	54	48	43	57	49	43	39	39	35	32	30	27	25	21	19	18	14	
5	58	48	41	36	52	43	38	33	35	30	27	26	24	21	19	17	16	12	
6	53	43	36	31	48	39	33	29	31	27	23	24	21	18	17	15	14	11	
7	49	39	32	27	44	35	29	25	28	24	20	21	18	16	15	13	12	9	
8	45	35	28	24	41	32	26	22	25	21	18	20	16	14	14	12	11	8	
9	42	32	25	21	38	29	23	19	23	19	16	18	15	13	13	11	9	7	
10	39	29	23	19	35	26	21	17	21	17	14	16	13	11	12	10	9	7	

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