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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: ITL78297

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ISSUE DATE: 08/29/13

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: MLS5-I2/D2-4-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: FOUR 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 = 121.4 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	1265	1265	1265	1265	1265	
5	1264	1253	1264	1269	1266	120
15	1199	1203	1243	1283	1295	352
25	1095	1120	1208	1297	1338	559
35	963	1015	1134	1239	1297	705
45	784	864	961	1033	1099	732
55	538	615	686	816	941	625
65	164	192	273	319	335	272
75	23	26	31	45	48	43
85	3	3	4	5	6	5
90	0	0	0	0	0	
95	38	54	38	45	46	62
105	241	392	379	342	322	364
115	484	688	731	711	705	672
125	715	861	1016	1051	1049	848
135	923	1010	1177	1264	1279	877
145	1100	1150	1261	1350	1377	783
155	1239	1261	1323	1371	1387	608
165	1334	1336	1365	1381	1385	385
175	1380	1374	1380	1381	1379	131
180	1381	1381	1381	1381	1381	

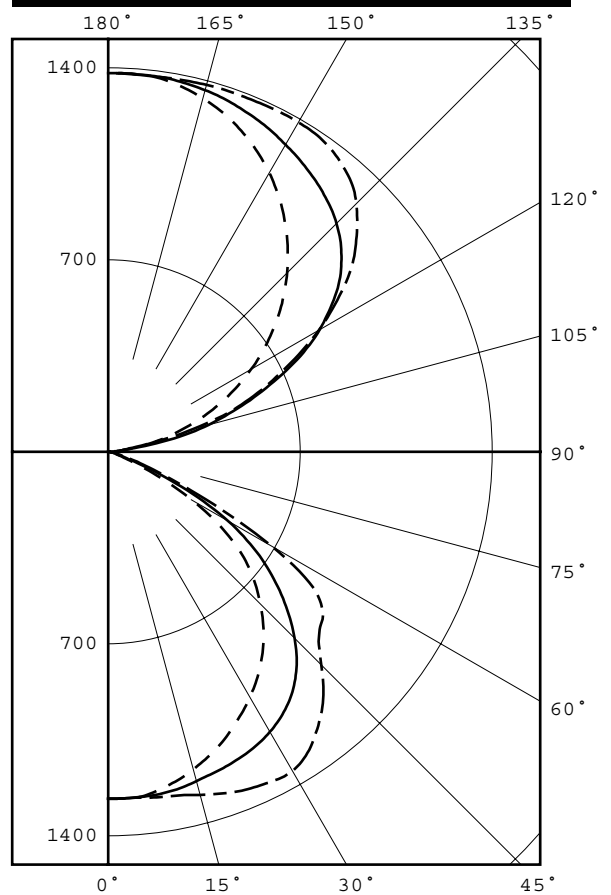
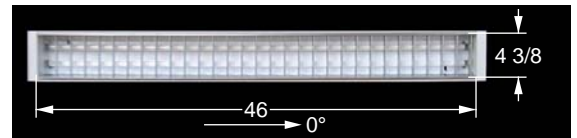
ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1031	9.9	12.7
0- 40	1736	16.7	21.3
0- 60	3093	29.7	38.0
0- 90	3414	32.8	41.9
90-120	1098	10.6	13.5
90-130	1946	18.7	23.9
90-150	3606	34.7	44.3
90-180	4730	45.5	58.1
0-180	8144	78.3	100.0

TOTAL LUMINAIRE EFFICIENCY = 78.3 % *

CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.22 1.53
SHIELDING ANGLES : 27 22

* SEE ADDENDUM FOR FURTHER INFORMATION



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

Checked S. BERGIN
Approved R. BEATTIE
Lighting Engineer



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

LUMINANCE DATA IN CANDELA/SQ M			
ANGLE	AVERAGE	AVERAGE	AVERAGE
IN DEG	0-DEG	45-DEG	90-DEG
45	8539.	10467.	11970.
55	7224.	9211.	12636.
65	2989.	4975.	6105.
75	684.	922.	1428.
85	265.	353.	530.



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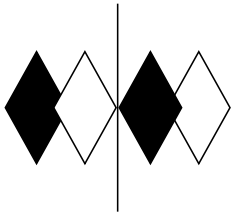
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CANDELA DISTRIBUTION
 LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	1265	1265	1265	1265	1265
5.0	1264	1253	1264	1269	1266
10.0	1237	1234	1259	1276	1276
15.0	1199	1203	1243	1283	1295
20.0	1152	1165	1227	1295	1321
25.0	1095	1120	1208	1297	1338
30.0	1033	1069	1179	1287	1343
35.0	963	1015	1134	1239	1297
40.0	881	949	1064	1149	1215
45.0	784	864	961	1033	1099
50.0	677	758	832	909	1007
55.0	538	615	686	816	941
60.0	357	417	505	621	690
65.0	164	192	273	319	335
70.0	55	66	88	123	136
75.0	23	26	31	45	48
80.0	9	10	13	16	18
85.0	3	3	4	5	6
90.0	0	0	0	0	0
95.0	38	54	38	45	46
100.0	130	220	179	122	105
105.0	241	392	379	342	322
110.0	361	554	550	540	533
115.0	484	688	731	711	705
120.0	602	783	890	892	887
125.0	715	861	1016	1051	1049
130.0	823	936	1110	1167	1179
135.0	923	1010	1177	1264	1279
140.0	1015	1084	1224	1319	1343
145.0	1100	1150	1261	1350	1377
150.0	1175	1210	1293	1364	1387
155.0	1239	1261	1323	1371	1387
160.0	1293	1303	1347	1378	1386
165.0	1334	1336	1365	1381	1385
170.0	1365	1360	1377	1382	1381
175.0	1380	1374	1380	1381	1379
180.0	1381	1381	1381	1381	1381



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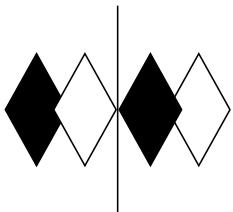
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5-DEGREE
 ZONAL LUMEN SUMMARY

0- 5	30
5- 10	90
10- 15	148
15- 20	204
20- 25	256
25- 30	303
30- 35	341
35- 40	364
40- 45	371
45- 50	360
50- 55	338
55- 60	287
60- 65	187
65- 70	85
70- 75	31
75- 80	12
80- 85	4
85- 90	1
90- 95	11
95-100	51
100-105	136
105-110	228
110-115	305
115-120	367
120-125	412
125-130	437
130-135	443
135-140	434
140-145	409
145-150	374
150-155	330
155-160	279
160-165	223
165-170	162
170-175	98
175-180	33

10-DEGREE
 ZONAL LUMEN SUMMARY

0- 10	120
0- 20	473
0- 30	1031
0- 40	1736
0- 50	2468
0- 60	3093
0- 70	3365
0- 80	3408
0- 90	3414
0-100	3476
0-110	3840
0-120	4512
0-130	5360
0-140	6237
0-150	7019
0-160	7628
0-170	8013
0-180	8144



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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	82	82	82	82	75	75	75	75	62	62	62	49	49	49	38	38	38	33	
1	76	73	70	67	69	66	64	62	55	53	52	44	43	42	35	34	33	29	
2	69	64	59	56	63	59	55	51	49	46	43	39	38	36	31	30	29	25	
3	63	56	51	47	58	52	47	43	43	40	37	35	33	31	28	26	25	21	
4	58	50	44	39	53	46	41	37	38	34	31	31	29	26	25	23	21	18	
5	53	44	38	34	48	41	36	32	34	30	27	28	25	23	22	20	19	16	
6	49	40	34	29	45	37	31	27	31	27	24	25	22	20	20	18	16	14	
7	45	36	30	26	41	33	28	24	28	24	21	23	20	18	18	16	14	12	
8	42	32	27	22	38	30	25	21	25	21	18	21	18	16	17	15	13	11	
9	39	30	24	20	36	27	22	19	23	19	16	19	16	14	15	13	12	10	
10	36	27	21	18	33	25	20	17	21	17	15	18	15	13	14	12	10	9	

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