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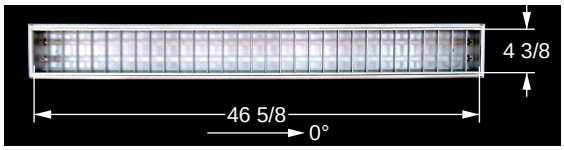
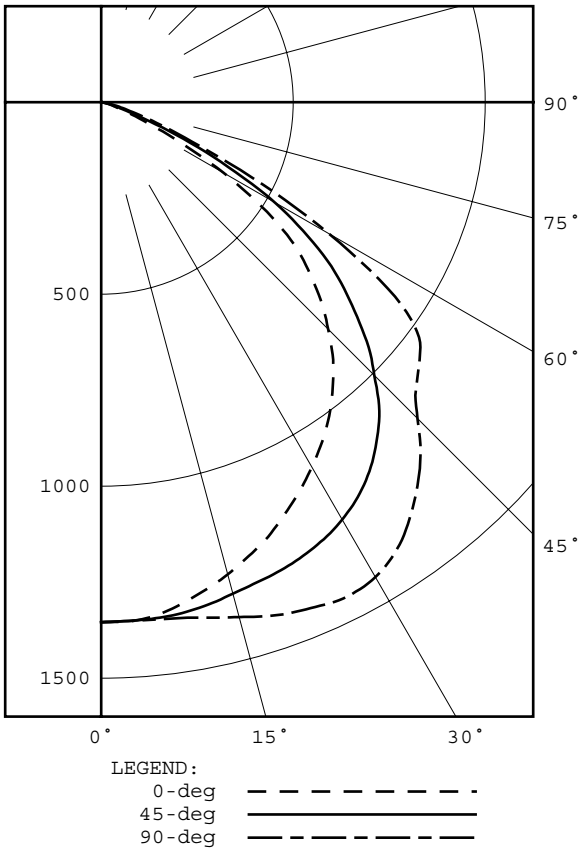
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955
INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA
PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL76164
ISSUE DATE: 02/15/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING
CATALOG NUMBER: MLS5-D2-4-X-PB-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, FABRICATED SEMI-SPECULAR METAL PARABOLIC 31-CELL LOUVER.
LAMPS: TWO 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENTS.
BALLAST: UNIVERSAL B228PUNV-C
MOUNTING: RECESSED
TOTAL REFLECTANCE OF PAINT = 89.1 %
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.
TOTAL INPUT WATTS = 58.7 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	1354	1354	1354	1354	1354	
5	1349	1351	1352	1354	1354	129
15	1273	1290	1325	1370	1388	376
25	1162	1203	1288	1384	1436	597
35	1026	1089	1202	1307	1375	749
45	836	923	1006	1089	1165	775
55	576	648	719	858	984	656
65	162	190	278	325	337	279
75	24	28	34	49	53	46
85	2	4	4	5	6	6
90	0	0	0	0	0	





ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1102	21.2	30.5
0- 40	1850	35.6	51.2
0- 60	3281	63.1	90.8
0- 90	3612	69.5	100.0
90-180	0	0.0	0.0
0-180	3612	69.5	100.0

TOTAL LUMINAIRE EFFICIENCY = 69.5 % *

CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 1.21	1.52
SHIELDING ANGLES	: 30	22
LUMINOUS LENGTH	:46.625	4.375

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	8984.	10811.	12519.
55	7631.	9525.	13036.
65	2913.	4998.	6059.
75	705.	998.	1556.
85	174.	349.	523.

* SEE ADDENDUM FOR FURTHER INFORMATION

Checked *B HYRE*
Approved *R BEATTIE*
Lighting Engineer

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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	1354	1354	1354	1354	1354
2.5	1354	1354	1353	1353	1353
5.0	1349	1351	1352	1354	1354
7.5	1335	1340	1350	1355	1357
10.0	1316	1326	1344	1359	1363
12.5	1295	1309	1336	1362	1375
15.0	1273	1290	1325	1370	1388
17.5	1248	1271	1316	1377	1404
20.0	1223	1249	1309	1383	1417
22.5	1194	1227	1300	1386	1426
25.0	1162	1203	1288	1384	1436
27.5	1131	1173	1274	1378	1437
30.0	1097	1147	1255	1365	1428
32.5	1063	1118	1232	1341	1407
35.0	1026	1089	1202	1307	1375
37.5	985	1058	1165	1264	1332
40.0	940	1017	1121	1209	1285
42.5	892	975	1071	1152	1231
45.0	836	923	1006	1089	1165
47.5	781	868	945	1024	1111
50.0	718	808	870	968	1079
52.5	656	733	797	915	1048
55.0	576	648	719	858	984
57.5	476	553	623	768	858
60.0	367	439	523	637	686
62.5	254	315	395	485	507
65.0	162	190	278	325	337
67.5	97	114	173	214	218
70.0	57	71	88	134	141
72.5	36	42	52	81	86
75.0	24	28	34	49	53
77.5	15	19	21	28	33
80.0	10	12	14	17	19
82.5	6	7	8	10	11
85.0	2	4	4	5	6
87.5	2	1	2	2	2
90.0	0	0	0	0	0

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	32
5- 10	96
10- 15	158
15- 20	218
20- 25	274
25- 30	323
30- 35	362
35- 40	387
40- 45	393
45- 50	382
50- 55	357
55- 60	299
60- 65	192
65- 70	87
70- 75	33
75- 80	13
80- 85	5
85- 90	1

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	129
0- 20	505
0- 30	1102
0- 40	1850
0- 50	2625
0- 60	3281
0- 70	3560
0- 80	3606
0- 90	3612

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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	83	83	83	83	81	81	81	81	77	77	77	74	74	74	71	71	71	69
1	77	74	72	69	75	73	70	68	70	68	66	67	66	64	65	63	62	61
2	71	66	62	58	69	65	61	58	62	59	56	60	57	55	58	56	54	52
3	65	58	53	49	63	57	53	49	55	51	48	53	50	47	52	49	46	45
4	60	52	46	42	58	51	46	42	49	45	41	48	44	41	46	43	40	39
5	55	47	41	37	54	46	40	36	44	40	36	43	39	36	42	38	35	34
6	51	42	36	32	50	41	36	32	40	35	32	39	35	31	38	34	31	30
7	47	38	32	28	46	38	32	28	37	32	28	36	31	28	35	31	28	26
8	44	35	29	25	43	34	29	25	33	28	25	33	28	25	32	28	25	23
9	41	32	26	23	40	31	26	23	31	26	22	30	26	22	29	25	22	21
10	38	29	24	20	37	29	24	20	28	24	20	28	23	20	27	23	20	19

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