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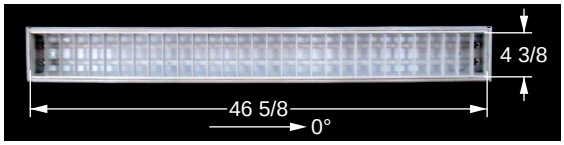
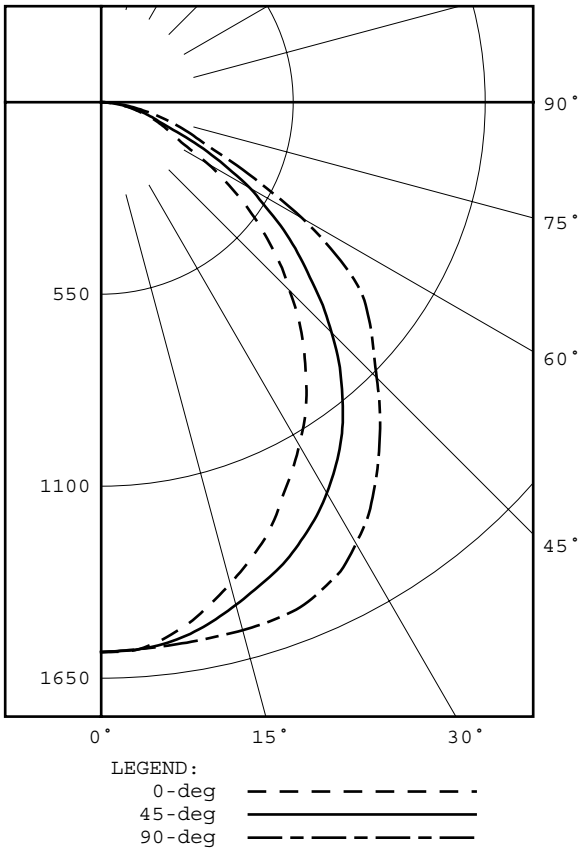
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955
INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA
PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL76165 PAGE: 1 OF 5
ISSUE DATE: 02/15/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING
CATALOG NUMBER: MLS5-D2-4-X-PBW-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 WHITE PAINTED 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 = 58.2 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	1575	1575	1575	1575	1575	
5	1563	1565	1568	1567	1570	149
15	1428	1450	1491	1546	1566	422
25	1237	1282	1373	1477	1527	635
35	1025	1084	1195	1295	1361	744
45	763	844	933	1026	1116	723
55	494	566	639	774	884	590
65	235	248	336	392	429	336
75	124	129	135	167	191	156
85	29	30	32	37	41	40
90	0	0	0	0	0	





ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1205	23.2	31.8
0- 40	1949	37.5	51.4
0- 60	3262	62.7	86.0
0- 90	3794	73.0	100.0
90-180	0	0.0	0.0
0-180	3794	73.0	100.0

TOTAL LUMINAIRE EFFICIENCY = 73.0 % *

CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 1.09	1.35
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	8199.	10026.	11993.
55	6544.	8465.	11711.
65	4225.	6041.	7713.
75	3641.	3963.	5608.
85	2528.	2790.	3575.

* 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	1575	1575	1575	1575	1575
2.5	1575	1574	1573	1569	1572
5.0	1563	1565	1568	1567	1570
7.5	1538	1543	1557	1565	1568
10.0	1507	1518	1540	1559	1567
12.5	1468	1482	1517	1551	1566
15.0	1428	1450	1491	1546	1566
17.5	1387	1414	1464	1535	1564
20.0	1345	1371	1438	1521	1560
22.5	1295	1328	1409	1502	1549
25.0	1237	1282	1373	1477	1527
27.5	1187	1231	1336	1442	1502
30.0	1135	1185	1293	1402	1460
32.5	1083	1134	1246	1350	1417
35.0	1025	1084	1195	1295	1361
37.5	961	1034	1137	1237	1303
40.0	900	972	1073	1164	1242
42.5	835	910	1008	1098	1181
45.0	763	844	933	1026	1116
47.5	702	779	861	959	1059
50.0	631	714	780	896	1008
52.5	564	640	710	835	955
55.0	494	566	639	774	884
57.5	422	489	558	696	779
60.0	354	402	493	600	666
62.5	277	327	410	499	535
65.0	235	248	336	392	429
67.5	205	213	262	313	337
70.0	178	185	199	256	282
72.5	151	155	163	206	236
75.0	124	129	135	167	191
77.5	99	100	107	126	146
80.0	75	78	81	93	108
82.5	50	54	56	65	72
85.0	29	30	32	37	41
87.5	10	11	13	15	18
90.0	0	0	0	0	0

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	38
5- 10	111
10- 15	180
15- 20	242
20- 25	296
25- 30	338
30- 35	366
35- 40	378
40- 45	372
45- 50	351
50- 55	320
55- 60	270
60- 65	200
65- 70	136
70- 75	94
75- 80	62
80- 85	32
85- 90	8

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	149
0- 20	571
0- 30	1205
0- 40	1949
0- 50	2672
0- 60	3262
0- 70	3598
0- 80	3754
0- 90	3794

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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	74	74	74	73
1	80	77	74	72	78	75	73	71	72	70	68	70	68	66	67	66	64	63
2	74	68	64	60	72	67	63	59	64	61	58	62	59	56	60	57	55	54
3	68	60	55	50	66	59	54	50	57	53	49	55	51	48	53	50	48	46
4	62	54	48	43	60	53	47	43	51	46	42	50	45	42	48	44	41	40
5	57	48	42	38	56	48	42	37	46	41	37	45	40	37	43	39	36	35
6	53	44	38	33	52	43	37	33	42	37	33	41	36	32	40	35	32	31
7	49	40	34	29	48	39	33	29	38	33	29	37	32	29	36	32	29	27
8	46	36	30	26	45	36	30	26	35	30	26	34	29	26	33	29	26	24
9	43	34	28	24	42	33	28	24	32	27	24	32	27	24	31	27	23	22
10	40	31	25	22	39	31	25	22	30	25	22	29	25	21	29	24	21	20

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