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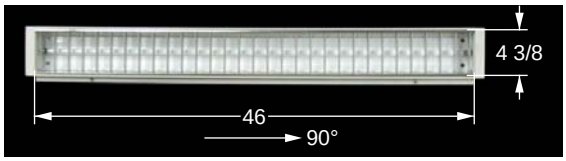
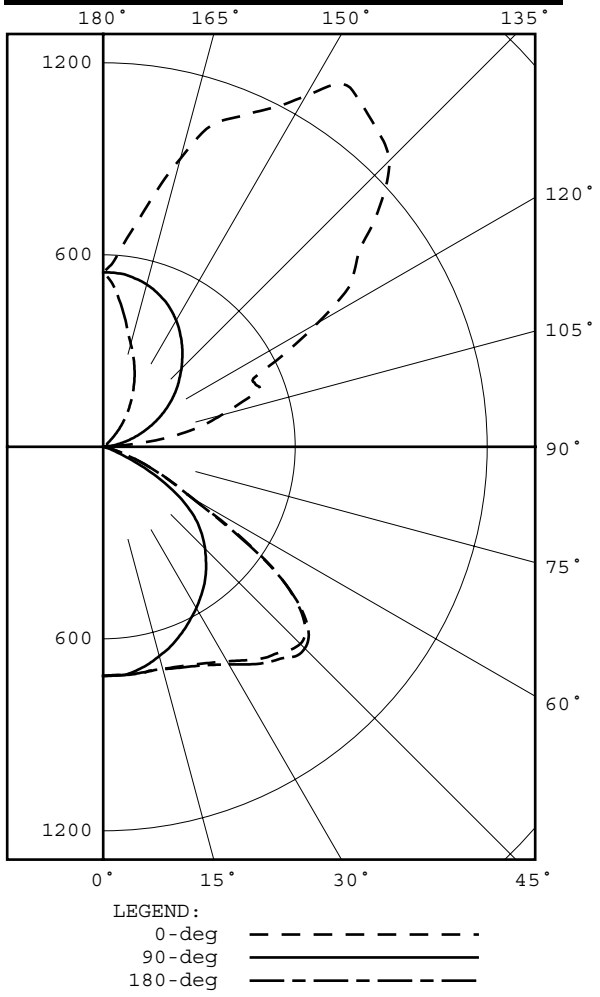
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955
INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA
PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL78299
ISSUE DATE: 08/22/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING
CATALOG NUMBER: MLP5-I1/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 MULTI-FACETED SPECULAR 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: TWO 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENTS.
BALLAST: UNIVERSAL B228PUNV-C, UNIVERSAL B228PUNV-N
THE 0 DEGREE PLANE IS PERPENDICULAR TO THE LAMPS.
TOTAL REFLECTANCE OF PAINT = 89.4 %
MOUNTING: WALL
TOTAL INPUT WATTS = 64.0 AT 120.0 VOLTS
REPORT IS BASED ON 2600 LUMENS PER LAMP. *



CANDELA DISTRIBUTION						FLUX
	0.0	45.0	90.0	135.0	180.0	
0	716	716	716	716	716	
5	715	715	716	715	716	68
15	719	695	677	697	719	197
25	747	671	617	674	753	313
35	813	651	544	658	829	418
45	871	632	450	642	891	496
55	622	498	316	504	614	419
65	188	159	99	158	184	157
75	33	19	13	19	32	27
85	4	3	2	3	4	3
90	0	0	0	0	0	
95	87	95	15	10	13	52
105	382	355	85	12	13	181
115	533	666	174	13	15	295
125	958	973	264	38	15	396
135	1264	1120	346	112	49	432
145	1359	1082	422	196	133	384
155	1158	997	485	285	231	281
165	933	763	525	386	333	164
175	620	592	544	509	482	53
180	545	545	545	545	545	



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	578	11.1	13.3
0- 40	997	19.2	23.0
0- 60	1912	36.8	44.1
0- 90	2099	40.4	48.4
90-120	528	10.1	12.2
90-130	924	17.8	21.3
90-150	1740	33.5	40.1
90-180	2239	43.1	51.6
0-180	4338	83.4	100.0

TOTAL LUMINAIRE EFFICIENCY = 83.4 % *

CIE TYPE - GENERAL DIFFUSE

PLANE	: 0-DEG	90-DEG	180-DEG
SPACING CRITERIA	: 1.77	1.21	1.82
SHIELDING ANGLES	: 29	27	

* SEE ADDENDUM FOR FURTHER INFORMATION

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

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

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 90-DEG	AVERAGE 180-DEG
45	9487.	4901.	9705.
55	8352.	4243.	8245.
65	3426.	1804.	3353.
75	982.	387.	952.
85	353.	177.	353.

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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	716	716	716	716	716	716	716	716	716
5.0	715	717	715	709	716	709	715	717	716
10.0	716	716	708	697	701	698	710	717	717
15.0	719	714	695	677	677	678	697	715	719
20.0	729	716	683	654	650	655	684	719	733
25.0	747	722	671	626	617	628	674	727	753
30.0	774	733	660	597	582	598	665	741	785
35.0	813	751	651	570	544	572	658	763	829
40.0	843	767	645	541	500	544	653	782	864
45.0	871	772	632	507	450	511	642	790	891
50.0	810	721	594	463	393	468	603	735	820
55.0	622	568	498	392	316	396	504	576	614
60.0	325	327	335	270	212	273	336	329	321
65.0	188	175	159	117	99	119	158	170	184
70.0	92	81	54	38	32	38	53	79	89
75.0	33	30	19	15	13	15	19	29	32
80.0	12	10	8	6	5	6	8	10	12
85.0	4	3	3	2	2	2	3	3	4
90.0	0	0	0	0	0	0	0	0	0
95.0	87	94	95	91	15	7	10	12	13
100.0	260	257	236	164	46	9	11	12	13
105.0	382	380	355	340	85	10	12	13	13
110.0	517	482	440	490	129	19	13	14	14
115.0	533	577	666	594	174	46	13	15	15
120.0	775	816	819	682	220	79	15	15	15
125.0	958	946	973	694	264	115	38	15	15
130.0	1110	1129	1043	735	306	154	73	30	20
135.0	1264	1233	1120	786	346	193	112	64	49
140.0	1316	1286	1126	799	385	233	152	106	89
145.0	1359	1319	1082	755	422	273	196	151	133
150.0	1266	1198	1051	713	456	315	240	198	181
155.0	1158	1124	997	676	485	365	285	245	231
160.0	1085	1050	877	645	507	413	331	295	282
165.0	933	887	763	617	525	458	386	346	333
170.0	754	726	667	586	537	497	450	416	401
175.0	620	612	592	558	544	532	509	492	482
180.0	545	545	545	545	545	545	545	545	545

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5-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 5	17
5- 10	51
10- 15	83
15- 20	114
20- 25	143
25- 30	170
30- 35	197
35- 40	222
40- 45	243
45- 50	253
50- 55	237
55- 60	182
60- 65	107
65- 70	50
70- 75	20
75- 80	8
80- 85	3
85- 90	1
90- 95	9
95-100	43
100-105	76
105-110	105
110-115	131
115-120	164
120-125	191
125-130	205
130-135	216
135-140	216
140-145	203
145-150	181
150-155	155
155-160	127
160-165	97
165-170	67
170-175	40
175-180	13

10-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 10	68
0- 20	265
0- 30	578
0- 40	997
0- 50	1493
0- 60	1912
0- 70	2069
0- 80	2096
0- 90	2099
0-100	2151
0-110	2332
0-120	2627
0-130	3023
0-140	3455
0-150	3840
0-160	4121
0-170	4286
0-180	4338

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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	89	89	89	89	82	82	82	82	69	69	69	57	57	57	46	46	46	40
1	82	79	76	73	75	73	70	68	61	59	58	51	50	49	41	41	40	35
2	75	69	64	60	69	64	60	56	54	51	48	45	43	41	37	35	34	30
3	68	61	55	50	63	56	51	47	48	44	41	40	37	35	33	31	29	26
4	63	54	47	43	57	50	44	40	43	38	35	36	32	30	29	27	25	22
5	57	48	41	36	53	44	39	34	38	33	30	32	29	26	26	24	22	19
6	53	43	36	31	48	40	34	30	34	29	26	29	25	23	24	21	19	17
7	49	39	32	27	45	36	30	26	31	26	23	26	22	20	21	19	17	15
8	45	35	28	24	41	32	27	23	28	23	20	24	20	17	20	17	15	13
9	42	32	26	21	39	30	24	20	25	21	18	22	18	16	18	15	13	12
10	39	29	23	19	36	27	22	18	23	19	16	20	16	14	17	14	12	10

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.

NOTE: THE ZONAL CAVITY CALCULATION TECHNIQUE IS ACCURATE WHEN LUMINAIRES WITH SYMMETRIC CANDELA DISTRIBUTIONS ARE EMPLOYED AND WHEN THE LUMINAIRES ARE LOCATED SYMMETRICALLY THROUGHOUT THE ROOM. THIS UNIT HAS SPECIAL CHARACTERISTICS AND THEREFORE THESE COEFFICIENTS SHOULD BE USED WITH CAUTION.

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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