

itl boulder

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: ITL70219

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ISSUE DATE: 10/12/11

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: LTP-02-X-4-X-OP/MPL-X-120-T5

LUMINAIRE: EXTRUDED SEMI-DIFFUSE METAL HOUSING WITH FABRICATED SEMI-DIFFUSE METAL END CAPS, ONE FORMED METAL FRONT AND REAR REFLECTOR WITH PREMIUM SPECULAR FINISH, ONE SEMI-SPECULAR REAR METAL REFLECTOR INSERT BEHIND EACH LAMP WITH PREMIUM SPECULAR FINISHED TOP AND FORWARD SIDE, CLEAR FLAT MICRO-PRISMATIC PLASTIC LENS. LENS PRISMS DOWN. OPEN TOP.

LAMPS: TWO 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENTS.

BALLASTS: TWO UNIVERSAL B228PUNV-C

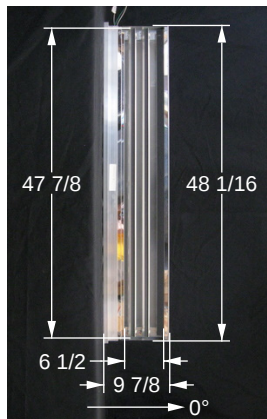
MOUNTING: WALL

THE 0 DEGREE PLANE IS PERPENDICULAR TO THE LAMPS.

TOTAL INPUT WATTS = 63.3 AT 120.0 VOLTS

LUMEN TO CANDELA RATIO USED = 9.17

REPORT IS BASED ON 2600 LUMENS PER LAMP. *



CANDELA DISTRIBUTION

FLUX

	0.0	45.0	90.0	135.0	180.0	
0	1153	1153	1153	1153	1153	
5	1163	1160	1156	1144	1131	110
15	1271	1202	1113	1073	1058	321
25	1292	1223	1012	968	929	494
35	1091	1051	856	752	713	559
45	638	647	548	455	428	427
55	275	254	246	202	207	217
65	137	136	116	122	113	127
75	83	82	72	74	73	81
85	32	36	31	28	24	33
90	0	0	0	0	0	
95	25	31	16	0	0	41
105	423	497	84	6	3	215
115	856	706	172	34	13	336
125	964	738	278	103	65	369
135	956	771	392	168	142	364
145	965	785	438	282	267	332
155	894	731	469	369	372	253
165	721	618	478	427	425	148
175	433	424	398	381	372	41
180	390	390	390	390	390	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	925	17.8	20.7
0- 40	1485	28.6	33.2
0- 60	2129	40.9	47.6
0- 90	2370	45.6	53.0
90-120	592	11.4	13.2
90-130	961	18.5	21.5
90-150	1657	31.9	37.1
90-180	2099	40.4	47.0
0-180	4469	85.9	100.0

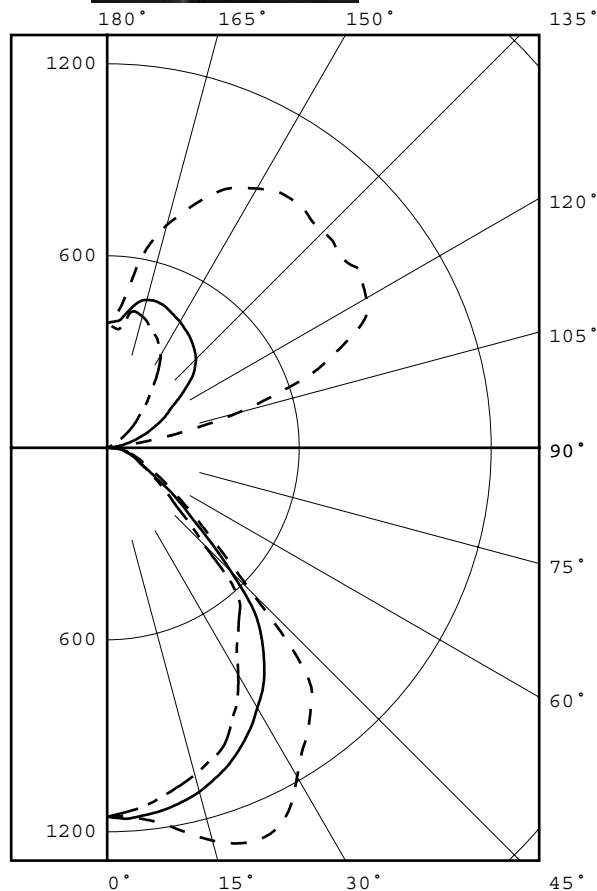
TOTAL LUMINAIRE EFFICIENCY = 85.9 % *

CIE TYPE - DIRECT-INDIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.44 1.21 1.09

SHIELDING ANGLES : 90 90



LEGEND:

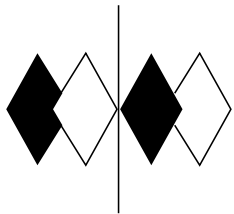
0-deg: - - - - -
90-deg: = = = = =
180-deg: - - - - -

Checked B. HYRE

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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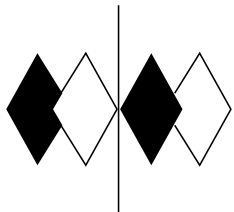
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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 5.563 44.375

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 90-DEG	AVERAGE 180-DEG
45	5666.	4867.	3801.
55	3011.	2693.	2266.
65	2036.	1724.	1679.
75	2014.	1747.	1771.
85	2306.	2234.	1729.



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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	1153	1153	1153	1153	1153	1153	1153	1153	1153
5.0	1163	1157	1160	1159	1156	1152	1144	1134	1131
10.0	1206	1193	1175	1152	1141	1129	1117	1101	1096
15.0	1271	1249	1202	1143	1113	1094	1073	1062	1058
20.0	1311	1288	1226	1130	1070	1035	1024	1020	1015
25.0	1292	1283	1223	1110	1012	971	968	949	929
30.0	1187	1200	1178	1080	938	899	874	837	819
35.0	1091	1075	1051	1017	856	810	752	711	713
40.0	996	978	921	870	743	657	631	643	647
45.0	638	647	647	604	548	460	455	435	428
50.0	401	416	394	372	354	306	296	295	282
55.0	275	270	254	257	246	221	202	198	207
60.0	197	181	179	177	161	159	153	146	154
65.0	137	134	136	134	116	126	122	115	113
70.0	111	101	103	107	94	101	92	88	95
75.0	83	79	82	84	72	79	74	69	73
80.0	57	60	59	57	62	53	53	52	49
85.0	32	37	36	36	31	31	28	27	24
90.0	0	0	0	0	0	0	0	0	0
95.0	25	39	31	113	16	0	0	0	0
100.0	154	210	259	283	47	7	2	2	2
105.0	423	480	497	363	84	26	6	3	3
110.0	684	697	647	398	127	55	19	11	8
115.0	856	845	706	435	172	84	34	19	13
120.0	935	886	732	480	219	138	65	36	38
125.0	964	912	738	505	278	180	103	80	65
130.0	943	911	748	530	348	219	124	111	103
135.0	956	912	771	552	392	265	168	149	142
140.0	964	935	783	571	418	313	234	200	200
145.0	965	930	785	578	438	352	282	269	267
150.0	935	896	766	577	455	385	325	328	334
155.0	894	853	731	568	469	410	369	367	372
160.0	813	777	679	553	481	429	404	398	394
165.0	721	693	618	538	478	445	427	425	425
170.0	598	587	545	491	445	430	429	429	431
175.0	433	429	424	413	398	390	381	375	372
180.0	390	390	390	390	390	390	390	390	390



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5-DEGREE

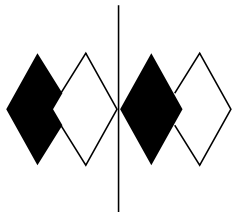
ZONAL LUMEN SUMMARY

0- 5	28.
5- 10	82.
10- 15	135.
15- 20	186.
20- 25	231.
25- 30	264.
30- 35	279.
35- 40	280.
40- 45	251.
45- 50	176.
50- 55	125.
55- 60	92.
60- 65	71.
65- 70	56.
70- 75	46.
75- 80	35.
80- 85	24.
85- 90	9.
90- 95	6.
95-100	35.
100-105	86.
105-110	130.
110-115	159.
115-120	177.
120-125	184.
125-130	185.
130-135	184.
135-140	180.
140-145	173.
145-150	159.
150-155	139.
155-160	115.
160-165	88.
165-170	60.
170-175	32.
175-180	9.

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	110.
0- 20	431.
0- 30	925.
0- 40	1485.
0- 50	1912.
0- 60	2129.
0- 70	2256.
0- 80	2337.
0- 90	2370.
0-100	2411.
0-110	2626.
0-120	2962.
0-130	3331.
0-140	3695.
0-150	4027.
0-160	4280.
0-170	4428.
0-180	4469.



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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	93	93	93	93	86	86	86	86	73	73	73	61	61	61	51	51	51	46
1	85	82	79	76	79	76	74	71	65	63	62	55	54	53	46	45	44	40
2	79	73	68	64	73	68	63	60	58	55	52	50	47	45	42	40	39	35
3	72	65	59	54	67	60	55	51	52	48	45	45	42	40	38	36	34	31
4	67	58	52	47	62	54	49	44	47	43	39	40	37	35	34	32	30	27
5	61	52	45	41	57	49	43	39	43	38	35	37	33	31	31	29	27	24
6	57	47	40	36	53	44	38	34	39	34	31	34	30	27	29	26	24	22
7	53	43	36	32	49	40	34	30	35	31	27	31	27	25	26	24	22	20
8	49	39	33	28	46	37	31	27	32	28	25	28	25	22	24	22	20	18
9	46	36	30	25	43	34	28	24	30	25	22	26	23	20	23	20	18	16
10	43	33	27	23	40	31	26	22	28	23	20	24	21	18	21	18	16	15

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 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