

itl boulder

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: ITL78309

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ISSUE DATE: 09/12/13

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: MLS5-I2/D2-4-PB-120-T8

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 32-CELL LOUVER. OPEN TOP.

LAMPS: FOUR 32-WATT T-8 FO32/835 LINEAR FLUORESCENTS.

BALLAST: UNIVERSAL B232IUNV-C, UNIVERSAL B232IUNVHP-N

THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.

TOTAL REFLECTANCE OF PAINT = 90.1 %

MOUNTING: SUSPENDED

TOTAL INPUT WATTS = 109.7 AT 120.0 VOLTS

REPORT IS BASED ON 2950 LUMENS PER LAMP.

CANDELA DISTRIBUTION

FLUX

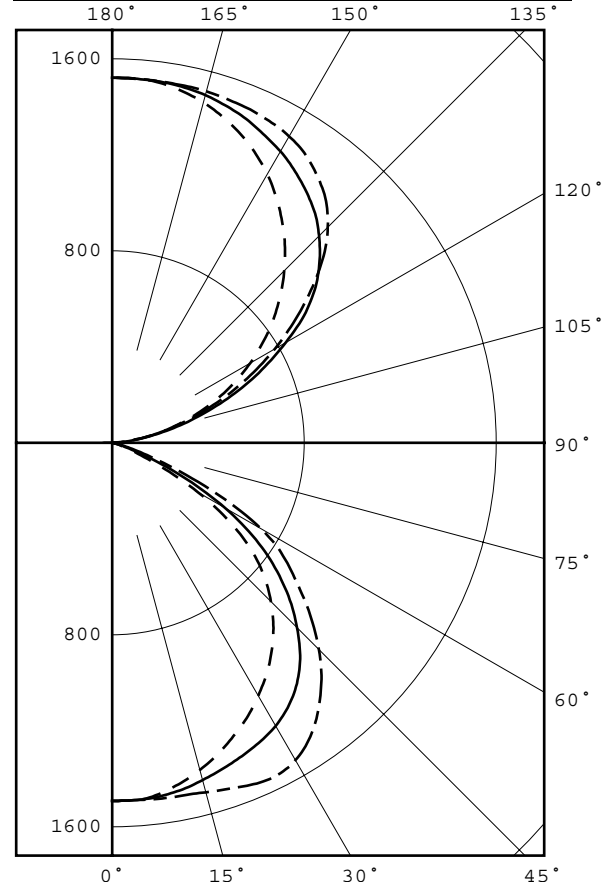
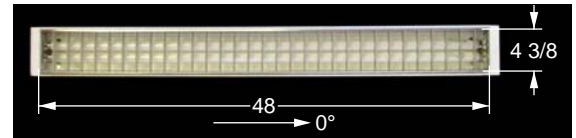
| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 | |
|-----|------|------|------|------|------|-----|
| 0 | 1492 | 1492 | 1492 | 1492 | 1492 | |
| 5 | 1490 | 1477 | 1491 | 1496 | 1493 | 142 |
| 15 | 1411 | 1413 | 1455 | 1496 | 1508 | 412 |
| 25 | 1290 | 1311 | 1398 | 1499 | 1547 | 649 |
| 35 | 1137 | 1184 | 1304 | 1400 | 1459 | 809 |
| 45 | 935 | 1006 | 1089 | 1151 | 1218 | 831 |
| 55 | 635 | 707 | 762 | 819 | 901 | 676 |
| 65 | 183 | 213 | 297 | 377 | 424 | 305 |
| 75 | 22 | 26 | 33 | 49 | 55 | 48 |
| 85 | 3 | 4 | 4 | 5 | 6 | 6 |
| 90 | 0 | 0 | 0 | 0 | 0 | |
| 95 | 41 | 57 | 49 | 44 | 45 | 67 |
| 105 | 273 | 358 | 310 | 285 | 278 | 327 |
| 115 | 536 | 693 | 659 | 618 | 605 | 627 |
| 125 | 788 | 913 | 1001 | 972 | 957 | 838 |
| 135 | 1014 | 1095 | 1219 | 1269 | 1270 | 910 |
| 145 | 1208 | 1256 | 1353 | 1417 | 1433 | 837 |
| 155 | 1363 | 1384 | 1441 | 1483 | 1495 | 662 |
| 165 | 1468 | 1468 | 1500 | 1513 | 1516 | 422 |
| 175 | 1520 | 1510 | 1519 | 1519 | 1520 | 145 |
| 180 | 1521 | 1521 | 1521 | 1521 | 1521 | |

ZONAL LUMEN SUMMARY

| ZONE | LUMENS | %LAMP | %FIXT |
|--------|--------|-------|-------|
| 0- 30 | 1202 | 10.2 | 13.8 |
| 0- 40 | 2011 | 17.0 | 23.1 |
| 0- 60 | 3518 | 29.8 | 40.4 |
| 0- 90 | 3877 | 32.9 | 44.5 |
| 90-120 | 1021 | 8.7 | 11.7 |
| 90-130 | 1859 | 15.8 | 21.3 |
| 90-150 | 3606 | 30.6 | 41.4 |
| 90-180 | 4834 | 41.0 | 55.5 |
| 0-180 | 8711 | 73.8 | 100.0 |

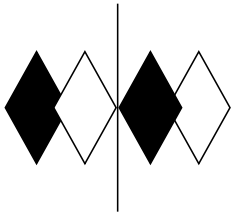
TOTAL LUMINAIRE EFFICIENCY = 73.8 %

CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.22 1.48
SHIELDING ANGLES : 27 20



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

Checked M KLOPF
Approved R BEATTIE
Lighting Engineer



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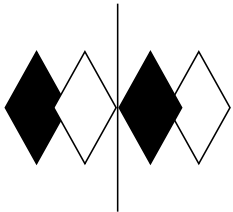
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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 48.000 4.375

LUMINANCE DATA IN CANDELA/SQ M

| ANGLE IN DEG | AVERAGE 0-DEG | AVERAGE 45-DEG | AVERAGE 90-DEG |
|--------------|---------------|----------------|----------------|
| 45 | 9760. | 11367. | 12714. |
| 55 | 8171. | 9806. | 11594. |
| 65 | 3196. | 5187. | 7405. |
| 75 | 627. | 941. | 1568. |
| 85 | 254. | 339. | 508. |



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CANDELA DISTRIBUTION
 LATERAL ANGLE

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|-------|------|------|------|------|------|
| 0.0 | 1492 | 1492 | 1492 | 1492 | 1492 |
| 5.0 | 1490 | 1477 | 1491 | 1496 | 1493 |
| 10.0 | 1458 | 1453 | 1479 | 1497 | 1498 |
| 15.0 | 1411 | 1413 | 1455 | 1496 | 1508 |
| 20.0 | 1354 | 1366 | 1427 | 1498 | 1528 |
| 25.0 | 1290 | 1311 | 1398 | 1499 | 1547 |
| 30.0 | 1217 | 1249 | 1362 | 1471 | 1527 |
| 35.0 | 1137 | 1184 | 1304 | 1400 | 1459 |
| 40.0 | 1044 | 1104 | 1215 | 1287 | 1352 |
| 45.0 | 935 | 1006 | 1089 | 1151 | 1218 |
| 50.0 | 806 | 882 | 940 | 991 | 1060 |
| 55.0 | 635 | 707 | 762 | 819 | 901 |
| 60.0 | 413 | 468 | 544 | 635 | 714 |
| 65.0 | 183 | 213 | 297 | 377 | 424 |
| 70.0 | 56 | 68 | 98 | 151 | 172 |
| 75.0 | 22 | 26 | 33 | 49 | 55 |
| 80.0 | 9 | 11 | 13 | 17 | 19 |
| 85.0 | 3 | 4 | 4 | 5 | 6 |
| 90.0 | 0 | 0 | 0 | 0 | 0 |
| 95.0 | 41 | 57 | 49 | 44 | 45 |
| 100.0 | 147 | 190 | 161 | 150 | 148 |
| 105.0 | 273 | 358 | 310 | 285 | 278 |
| 110.0 | 402 | 544 | 479 | 445 | 433 |
| 115.0 | 536 | 693 | 659 | 618 | 605 |
| 120.0 | 664 | 812 | 835 | 797 | 782 |
| 125.0 | 788 | 913 | 1001 | 972 | 957 |
| 130.0 | 904 | 1006 | 1124 | 1142 | 1128 |
| 135.0 | 1014 | 1095 | 1219 | 1269 | 1270 |
| 140.0 | 1116 | 1179 | 1295 | 1355 | 1369 |
| 145.0 | 1208 | 1256 | 1353 | 1417 | 1433 |
| 150.0 | 1292 | 1326 | 1402 | 1457 | 1474 |
| 155.0 | 1363 | 1384 | 1441 | 1483 | 1495 |
| 160.0 | 1421 | 1431 | 1475 | 1500 | 1507 |
| 165.0 | 1468 | 1468 | 1500 | 1513 | 1516 |
| 170.0 | 1501 | 1495 | 1514 | 1519 | 1518 |
| 175.0 | 1520 | 1510 | 1519 | 1519 | 1520 |
| 180.0 | 1521 | 1521 | 1521 | 1521 | 1521 |



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5-DEGREE

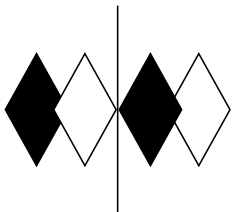
ZONAL LUMEN SUMMARY

| | |
|---------|-----|
| 0- 5 | 36 |
| 5- 10 | 106 |
| 10- 15 | 174 |
| 15- 20 | 238 |
| 20- 25 | 298 |
| 25- 30 | 351 |
| 30- 35 | 392 |
| 35- 40 | 417 |
| 40- 45 | 423 |
| 45- 50 | 408 |
| 50- 55 | 370 |
| 55- 60 | 306 |
| 60- 65 | 207 |
| 65- 70 | 99 |
| 70- 75 | 35 |
| 75- 80 | 13 |
| 80- 85 | 5 |
| 85- 90 | 1 |
| 90- 95 | 11 |
| 95-100 | 56 |
| 100-105 | 124 |
| 105-110 | 203 |
| 110-115 | 280 |
| 115-120 | 347 |
| 120-125 | 400 |
| 125-130 | 438 |
| 130-135 | 456 |
| 135-140 | 454 |
| 140-145 | 435 |
| 145-150 | 402 |
| 150-155 | 358 |
| 155-160 | 304 |
| 160-165 | 244 |
| 165-170 | 178 |
| 170-175 | 108 |
| 175-180 | 36 |

10-DEGREE

ZONAL LUMEN SUMMARY

| | |
|-------|------|
| 0- 10 | 142 |
| 0- 20 | 554 |
| 0- 30 | 1202 |
| 0- 40 | 2011 |
| 0- 50 | 2842 |
| 0- 60 | 3518 |
| 0- 70 | 3823 |
| 0- 80 | 3871 |
| 0- 90 | 3877 |
| 0-100 | 3944 |
| 0-110 | 4271 |
| 0-120 | 4898 |
| 0-130 | 5736 |
| 0-140 | 6646 |
| 0-150 | 7482 |
| 0-160 | 8144 |
| 0-170 | 8567 |
| 0-180 | 8711 |



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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 | 78 | 78 | 78 | 78 | 72 | 72 | 72 | 72 | 59 | 59 | 59 | 48 | 48 | 48 | 38 | 38 | 38 | 33 | 33 |
| 1 | 72 | 69 | 66 | 64 | 66 | 63 | 61 | 59 | 53 | 51 | 50 | 43 | 42 | 41 | 34 | 34 | 33 | 29 | 29 |
| 2 | 66 | 61 | 56 | 53 | 60 | 56 | 52 | 49 | 47 | 44 | 42 | 38 | 37 | 35 | 31 | 29 | 28 | 25 | 25 |
| 3 | 60 | 54 | 48 | 44 | 55 | 49 | 45 | 41 | 41 | 38 | 36 | 34 | 32 | 30 | 27 | 26 | 25 | 21 | 21 |
| 4 | 55 | 47 | 42 | 38 | 50 | 44 | 39 | 35 | 37 | 33 | 30 | 31 | 28 | 26 | 25 | 23 | 21 | 18 | 18 |
| 5 | 51 | 42 | 37 | 32 | 46 | 39 | 34 | 30 | 33 | 29 | 26 | 27 | 25 | 22 | 22 | 20 | 19 | 16 | 16 |
| 6 | 47 | 38 | 32 | 28 | 43 | 35 | 30 | 26 | 30 | 26 | 23 | 25 | 22 | 20 | 20 | 18 | 16 | 14 | 14 |
| 7 | 43 | 34 | 28 | 24 | 39 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 20 | 17 | 18 | 16 | 14 | 13 | 13 |
| 8 | 40 | 31 | 25 | 22 | 37 | 29 | 24 | 20 | 25 | 21 | 18 | 21 | 18 | 15 | 17 | 15 | 13 | 11 | 11 |
| 9 | 37 | 28 | 23 | 19 | 34 | 26 | 21 | 18 | 22 | 19 | 16 | 19 | 16 | 14 | 15 | 13 | 12 | 10 | 10 |
| 10 | 35 | 26 | 21 | 17 | 32 | 24 | 19 | 16 | 21 | 17 | 14 | 17 | 14 | 12 | 14 | 12 | 11 | 9 | 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.