



LUMINAIRE TESTING LABORATORY, INC.



SUSTAINING  
MEMBER

905 Harrison Street · Allentown, PA 18103 · (610) 770-1044 · Fax (610) 770-8912 · www.LuminaireTesting.com

LTL NUMBER: 05817

DATE: 05-17-2001

PREPARED FOR: ALM ARCHITECTURAL LIGHTING

CATALOG NUMBER: ZB-24G-440-BIAX-ELB-120V

LUMINAIRE: FORMED STEEL HOUSING, FORMED WHITE ENAMEL STEEL REFLECTOR,  
FORMED WHITE ENAMEL PERFORATED STEEL SHIELD WITH TRANSLUCENT  
WHITE ACRYLIC INSERT BELOW LAMPS.

LAMPS: FOUR SYLVANIA FT40DL/840/RS RATED AT 3150 LUMENS EACH.

BALLASTS: TWO ADVANCE RCN-2TTP40-SC

MOUNTING: RECESSED

TOTAL INPUT WATTS =131.7 AT 120.0 VOLTS

THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.

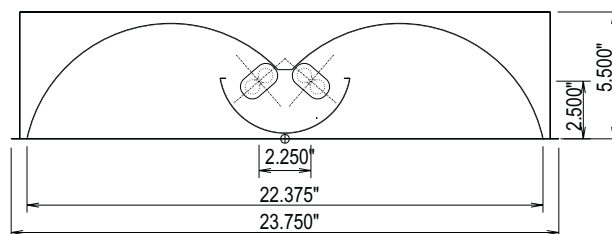
#05817

#### CANDELA DISTRIBUTION

|    | 0.0  | 22.5 | 45.0 | 67.5 | 90.0 |
|----|------|------|------|------|------|
| 0  | 2612 | 2612 | 2612 | 2612 | 2612 |
| 5  | 2585 | 2600 | 2608 | 2609 | 2610 |
| 15 | 2482 | 2507 | 2537 | 2561 | 2571 |
| 25 | 2284 | 2327 | 2394 | 2452 | 2476 |
| 35 | 2003 | 2073 | 2189 | 2284 | 2322 |
| 45 | 1646 | 1750 | 1918 | 2055 | 2108 |
| 55 | 1231 | 1371 | 1593 | 1762 | 1825 |
| 65 | 807  | 966  | 1208 | 1353 | 1390 |
| 75 | 424  | 557  | 649  | 658  | 686  |
| 85 | 99   | 111  | 134  | 145  | 148  |
| 90 | 0    | 0    | 0    | 0    | 0    |

#### FLUX

|      |
|------|
| 248  |
| 716  |
| 1103 |
| 1364 |
| 1467 |
| 1399 |
| 1140 |
| 639  |
| 154  |



#### ZONAL LUMEN SUMMARY

| ZONE   | LUMENS | %LAMP | %FIXT |
|--------|--------|-------|-------|
| 0- 30  | 2067   | 16.4  | 25.1  |
| 0- 40  | 3431   | 27.2  | 41.7  |
| 0- 60  | 6297   | 50.0  | 76.5  |
| 0- 90  | 8229   | 65.3  | 100.0 |
| 90-180 | 0      | 0.0   | 0.0   |
| 0-180  | 8229   | 65.3  | 100.0 |

TOTAL LUMINAIRE EFFICIENCY: 65.3%

TOTAL REFLECTANCE OF PAINT: 91.7%

CIE TYPE: DIRECT

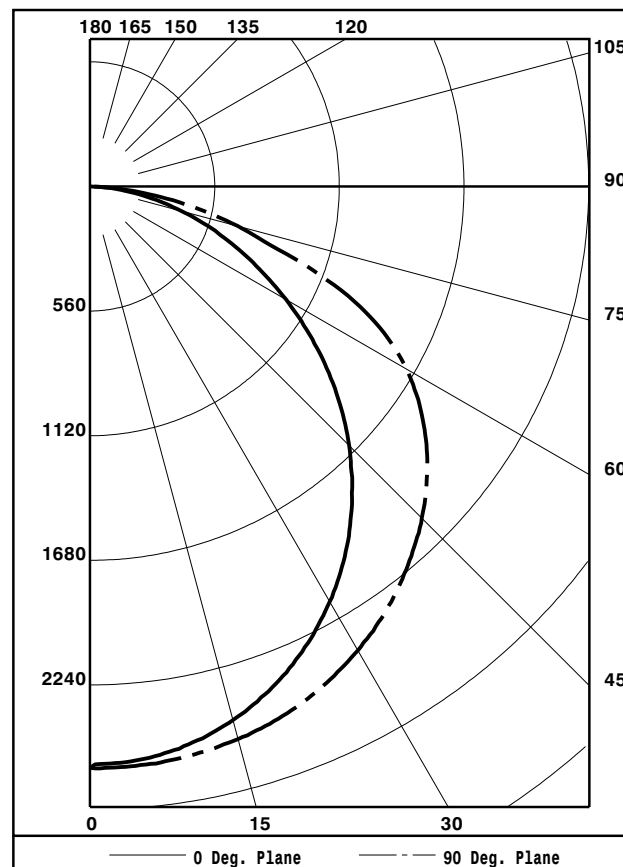
PLANE: 0-DEG 90-DEG

SPACING CRITERIA: 1.2 1.4

LUMINOUS LENGTH: 47.000 22.375

#### LUMINANCE IN CANDELA PER SQUARE METER

| ANGLE<br>IN DEG | AVERAGE<br>0-DEG | AVERAGE<br>45-DEG | AVERAGE<br>90-DEG |
|-----------------|------------------|-------------------|-------------------|
| 0               | 3850.            | 3850.             | 3850.             |
| 45              | 3431.            | 3998.             | 4394.             |
| 55              | 3163.            | 4093.             | 4689.             |
| 65              | 2814.            | 4213.             | 4847.             |
| 75              | 2414.            | 3696.             | 3906.             |
| 85              | 1674.            | 2266.             | 2503.             |



TESTED BY HERSCHEL SCHRECK

CHECKED BY MIKE GRATHER

THIS REPORT BASED ON LM-41 AND OTHER PERTINENT IES PROCEDURES.



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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 | 76 | 76 | 76 | 76 | 73 | 73 | 73 | 69 | 69 | 69 | 67 | 67 | 67 | 65 |
| 1  | 71 | 68 | 66 | 63 | 70 | 67 | 64 | 62 | 64 | 62 | 60 | 62 | 60 | 58 | 59 | 58 | 57 | 55 |
| 2  | 65 | 60 | 55 | 52 | 63 | 58 | 54 | 51 | 56 | 53 | 50 | 54 | 51 | 49 | 52 | 50 | 48 | 46 |
| 3  | 59 | 53 | 47 | 43 | 58 | 52 | 47 | 43 | 50 | 46 | 42 | 48 | 44 | 41 | 46 | 43 | 41 | 39 |
| 4  | 54 | 47 | 41 | 37 | 53 | 46 | 40 | 36 | 44 | 39 | 36 | 43 | 39 | 35 | 41 | 38 | 35 | 33 |
| 5  | 49 | 41 | 35 | 31 | 48 | 40 | 35 | 30 | 39 | 34 | 30 | 37 | 33 | 30 | 36 | 32 | 29 | 28 |
| 6  | 45 | 37 | 31 | 26 | 44 | 36 | 30 | 26 | 35 | 30 | 26 | 34 | 29 | 26 | 33 | 29 | 25 | 24 |
| 7  | 42 | 33 | 27 | 23 | 41 | 32 | 27 | 23 | 31 | 26 | 22 | 30 | 26 | 22 | 29 | 25 | 22 | 21 |
| 8  | 38 | 29 | 24 | 20 | 37 | 29 | 23 | 20 | 28 | 23 | 19 | 27 | 23 | 19 | 26 | 22 | 19 | 18 |
| 9  | 35 | 26 | 21 | 17 | 34 | 26 | 20 | 17 | 25 | 20 | 17 | 24 | 20 | 17 | 24 | 19 | 16 | 15 |
| 10 | 33 | 24 | 18 | 15 | 32 | 23 | 18 | 15 | 23 | 18 | 15 | 22 | 18 | 15 | 21 | 17 | 15 | 13 |

CANDELA DISTRIBUTION

|    |      |      |      |      |      |
|----|------|------|------|------|------|
|    | 0.0  | 22.5 | 45.0 | 67.5 | 90.0 |
| 0  | 2612 | 2612 | 2612 | 2612 | 2612 |
| 5  | 2585 | 2600 | 2608 | 2609 | 2610 |
| 10 | 2546 | 2565 | 2580 | 2593 | 2597 |
| 15 | 2482 | 2507 | 2537 | 2561 | 2571 |
| 20 | 2395 | 2428 | 2474 | 2514 | 2531 |
| 25 | 2284 | 2327 | 2394 | 2452 | 2476 |
| 30 | 2154 | 2210 | 2303 | 2376 | 2407 |
| 35 | 2003 | 2073 | 2189 | 2284 | 2322 |
| 40 | 1832 | 1917 | 2060 | 2176 | 2222 |
| 45 | 1646 | 1750 | 1918 | 2055 | 2108 |
| 50 | 1444 | 1567 | 1762 | 1916 | 1977 |
| 55 | 1231 | 1371 | 1593 | 1762 | 1825 |
| 60 | 1017 | 1171 | 1411 | 1584 | 1641 |
| 65 | 807  | 966  | 1208 | 1353 | 1390 |
| 70 | 611  | 761  | 972  | 1026 | 1023 |
| 75 | 424  | 557  | 649  | 658  | 686  |
| 80 | 253  | 332  | 347  | 390  | 404  |
| 85 | 99   | 111  | 134  | 145  | 148  |
| 90 | 0    | 0    | 0    | 0    | 0    |

ZONAL LUMEN SUMMARY

|        |      |
|--------|------|
| 0- 5   | 62.  |
| 5- 10  | 186. |
| 10- 15 | 303. |
| 15- 20 | 413. |
| 20- 25 | 510. |
| 25- 30 | 593. |
| 30- 35 | 659. |
| 35- 40 | 705. |
| 40- 45 | 731. |
| 45- 50 | 737. |
| 50- 55 | 719. |
| 55- 60 | 680. |
| 60- 65 | 617. |
| 65- 70 | 523. |
| 70- 75 | 388. |
| 75- 80 | 251. |
| 80- 85 | 125. |
| 85- 90 | 28.  |

THIS TEST WAS CONDUCTED USING RELATIVE PHOTOMETRY TECHNIQUES ACCORDING TO STANDARD IESNA PROCEDURES. THE USER MUST THEREFORE USE CAUTION IN THE FOLLOWING SITUATIONS: 1) THIS TEST WAS PERFORMED USING A SPECIFIC BALLAST/LAMP COMBINATION. EXTRAPOLATION OF THESE DATA FOR OTHER BALLAST/LAMP COMBINATIONS MAY PRODUCE ERRONEOUS RESULTS. 2) ACCORDING TO IESNA PROCEDURES, THE BALLAST(S) AND LAMP(S) ARE PRESUMED TO PRODUCE 100% OF RATED OUTPUT. AN APPROPRIATE BALLAST FACTOR MUST BE APPLIED TO THE LUMEN OUTPUT RATINGS AND LUMINOUS INTENSITY VALUES GIVEN. 3) THIS TEST WAS CONDUCTED IN A CONTROLLED LABORATORY ENVIRONMENT WHERE THE AMBIENT TEMPERATURE WAS HELD AT 25°C ±1°C. FIELD PERFORMANCE MAY DIFFER PARTICULARLY IN REGARDS TO CHANGE IN LUMINOUS OUTPUT AS A RESULT OF DIFFERENCE IN AMBIENT TEMPERATURE AND METHOD OF MOUNTING THE LUMINAIRE.



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VISUAL COMFORT PROBABILITY TABLE

RATED LUMENS PER LAMP 3150.

| 100. FC. REFLECTANCES 80/50/20 |     | ROOM LUMINAIRES 0 DEG PLANE |      |      |      | LUMINAIRES 90 DEG PLANE |      |      |      |
|--------------------------------|-----|-----------------------------|------|------|------|-------------------------|------|------|------|
| W                              | L   | 8.5                         | 10.0 | 13.0 | 16.0 | 8.5                     | 10.0 | 13.0 | 16.0 |
| 20                             | 20  | 50                          | 57   | 70   | 82   | 43                      | 49   | 62   | 78   |
| 20                             | 30  | 44                          | 49   | 57   | 69   | 37                      | 41   | 46   | 59   |
| 20                             | 40  | 43                          | 46   | 52   | 59   | 35                      | 37   | 40   | 47   |
| 20                             | 60  | 43                          | 45   | 48   | 53   | 34                      | 36   | 37   | 41   |
|                                |     |                             |      |      |      |                         |      |      |      |
| 30                             | 20  | 49                          | 55   | 66   | 78   | 45                      | 50   | 61   | 75   |
| 30                             | 30  | 44                          | 47   | 53   | 64   | 39                      | 41   | 45   | 56   |
| 30                             | 40  | 42                          | 44   | 48   | 54   | 36                      | 37   | 39   | 45   |
| 30                             | 60  | 42                          | 43   | 44   | 49   | 35                      | 36   | 35   | 39   |
| 30                             | 80  | 42                          | 43   | 43   | 47   | 35                      | 36   | 34   | 37   |
|                                |     |                             |      |      |      |                         |      |      |      |
| 40                             | 20  | 51                          | 56   | 64   | 75   | 48                      | 52   | 61   | 74   |
| 40                             | 30  | 45                          | 48   | 52   | 61   | 41                      | 43   | 46   | 56   |
| 40                             | 40  | 43                          | 44   | 46   | 52   | 38                      | 39   | 40   | 45   |
| 40                             | 60  | 43                          | 43   | 42   | 47   | 37                      | 37   | 36   | 39   |
| 40                             | 80  | 43                          | 43   | 41   | 44   | 37                      | 37   | 34   | 36   |
| 40                             | 100 | 44                          | 43   | 42   | 44   | 37                      | 37   | 34   | 35   |
|                                |     |                             |      |      |      |                         |      |      |      |
| 60                             | 30  | 47                          | 49   | 52   | 60   | 44                      | 46   | 47   | 56   |
| 60                             | 40  | 45                          | 45   | 46   | 51   | 41                      | 41   | 41   | 45   |
| 60                             | 60  | 43                          | 43   | 42   | 45   | 38                      | 38   | 36   | 39   |
| 60                             | 80  | 43                          | 43   | 41   | 43   | 38                      | 38   | 35   | 36   |
| 60                             | 100 | 44                          | 43   | 41   | 42   | 38                      | 38   | 34   | 35   |
|                                |     |                             |      |      |      |                         |      |      |      |
| 100                            | 40  | 49                          | 49   | 48   | 52   | 46                      | 46   | 44   | 48   |
| 100                            | 60  | 47                          | 46   | 44   | 46   | 43                      | 42   | 39   | 42   |
| 100                            | 80  | 46                          | 45   | 42   | 43   | 42                      | 41   | 37   | 38   |
| 100                            | 100 | 47                          | 45   | 42   | 42   | 42                      | 41   | 37   | 36   |