



# LUMINAIRE TESTING LABORATORY, INC.

SUSTAINING  
MEMBER  
of the  
IESNA

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

LTL NUMBER: 15061

DATE: 04-17-2009

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: LM3P-02-X-PBW-X-120-T8

LUMINAIRE: FORMED STEEL AND EXTRUDED ALUMINUM HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, 28 CELL, 3/4" DEEP, FORMED WHITE ENAMEL ALUMINUM LOUVER, OPEN TOP.

LAMP: TWO 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.

LAMP CATALOG NUMBER: SYLVANIA FO32/741/ECO

BALLAST: ONE SYLVANIA QTP1X32T8/UNV-ISCN-SC

MOUNTING: WALL

ELECTRICAL VALUES: 120.0VAC, 0.4694A, 56.18W

## Candela Distribution

|     | 0    | 22.5 | 45   | 67.5 | 90  | 112.5 | 135 | 157.5 | 180 | 202.5 | 225 | 247.5 | 270 | 292.5 | 315  | 337.5 | Flux  |
|-----|------|------|------|------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|------|-------|-------|
| 0   | 184  | 184  | 184  | 184  | 184 | 184   | 184 | 184   | 184 | 184   | 184 | 184   | 184 | 184   | 184  | 184   |       |
| 5   | 210  | 206  | 200  | 192  | 181 | 172   | 164 | 158   | 158 | 158   | 164 | 172   | 181 | 192   | 200  | 206   | 17.3  |
| 15  | 260  | 250  | 227  | 198  | 165 | 139   | 118 | 108   | 109 | 108   | 118 | 139   | 165 | 198   | 227  | 250   | 49.5  |
| 25  | 293  | 288  | 249  | 196  | 143 | 103   | 98  | 107   | 95  | 107   | 98  | 103   | 143 | 196   | 249  | 288   | 78.5  |
| 35  | 292  | 277  | 242  | 188  | 117 | 72    | 52  | 22    | 19  | 22    | 52  | 72    | 117 | 188   | 242  | 277   | 88.5  |
| 45  | 256  | 243  | 221  | 175  | 84  | 42    | 9   | 6     | 7   | 6     | 9   | 42    | 84  | 175   | 221  | 243   | 87.6  |
| 55  | 223  | 198  | 172  | 135  | 45  | 4     | 1   | 1     | 2   | 1     | 1   | 4     | 45  | 135   | 172  | 198   | 75.8  |
| 65  | 230  | 199  | 137  | 86   | 4   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 4   | 86    | 137  | 199   | 66.5  |
| 75  | 132  | 115  | 82   | 11   | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 11    | 82   | 115   | 36.6  |
| 85  | 30   | 23   | 8    | 0    | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 8    | 23    | 8.0   |
| 90  | 20   | 15   | 3    | 0    | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 3    | 15    |       |
| 95  | 121  | 118  | 111  | 99   | 22  | 73    | 80  | 80    | 79  | 80    | 80  | 73    | 22  | 99    | 111  | 118   | 100.0 |
| 105 | 458  | 456  | 440  | 347  | 139 | 224   | 319 | 349   | 356 | 349   | 319 | 224   | 139 | 347   | 440  | 456   | 351.1 |
| 115 | 774  | 748  | 685  | 548  | 283 | 388   | 453 | 540   | 561 | 540   | 453 | 388   | 283 | 548   | 685  | 748   | 531.4 |
| 125 | 998  | 962  | 869  | 691  | 430 | 522   | 592 | 616   | 648 | 616   | 592 | 522   | 430 | 691   | 869  | 962   | 615.6 |
| 135 | 1132 | 1108 | 1002 | 724  | 565 | 647   | 742 | 775   | 779 | 775   | 742 | 647   | 565 | 724   | 1002 | 1108  | 628.4 |
| 145 | 1214 | 1179 | 1031 | 793  | 683 | 746   | 815 | 874   | 900 | 874   | 815 | 746   | 683 | 793   | 1031 | 1179  | 561.3 |
| 155 | 1138 | 1077 | 942  | 845  | 778 | 817   | 871 | 913   | 923 | 913   | 871 | 817   | 778 | 845   | 942  | 1077  | 420.5 |
| 165 | 984  | 972  | 930  | 842  | 845 | 858   | 891 | 916   | 925 | 916   | 891 | 858   | 845 | 842   | 930  | 972   | 254.9 |
| 175 | 868  | 864  | 859  | 865  | 881 | 887   | 884 | 888   | 891 | 888   | 884 | 887   | 881 | 865   | 859  | 864   | 83.9  |
| 180 | 886  | 886  | 886  | 886  | 886 | 886   | 886 | 886   | 886 | 886   | 886 | 886   | 886 | 886   | 886  | 886   |       |

## Zonal Lumen Summary

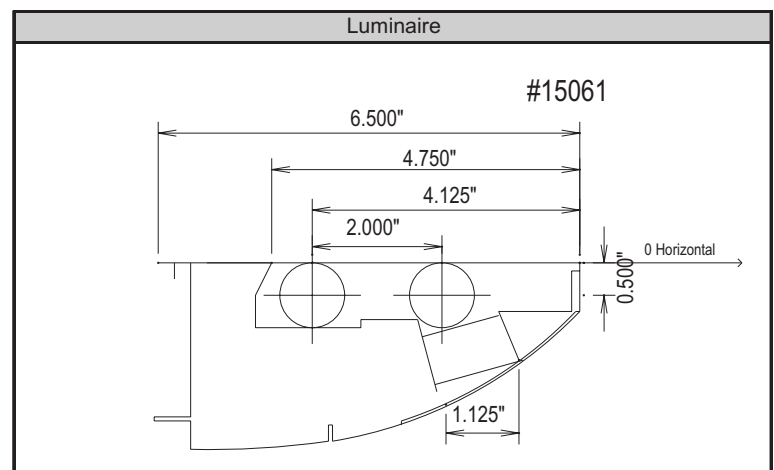
| Zone   | Lumens | % of Lamp | % of Luminaire |
|--------|--------|-----------|----------------|
| 0-30   | 145.3  | 2.5%      | 3.6%           |
| 0-40   | 233.8  | 4.1%      | 5.8%           |
| 0-60   | 397.2  | 7.0%      | 9.8%           |
| 0-90   | 508.3  | 8.9%      | 12.5%          |
| 90-180 | 3547.3 | 62.2%     | 87.5%          |
| 0-180  | 4055.6 | 71.2%     | 100.0%         |

Total luminaire efficiency: 71.2%

CIE Type: Semi-Indirect

Spacing Criterion: 0 deg: 1.99 90 deg: 1.08  
180 deg: 0.85 270 deg: 1.08

Shielding angle: 0 deg: 26 90 deg: 31



Approved By: MG

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



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Candela Tabulation (5 degree Vertical Increments)

|     | 0    | 22.5 | 45   | 67.5 | 90  | 112.5 | 135 | 157.5 | 180 | 202.5 | 225 | 247.5 | 270 | 292.5 | 315  | 337.5 |
|-----|------|------|------|------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|------|-------|
| 0   | 184  | 184  | 184  | 184  | 184 | 184   | 184 | 184   | 184 | 184   | 184 | 184   | 184 | 184   | 184  | 184   |
| 5   | 210  | 206  | 200  | 192  | 181 | 172   | 164 | 158   | 158 | 158   | 164 | 172   | 181 | 192   | 200  | 206   |
| 10  | 234  | 229  | 215  | 196  | 174 | 157   | 142 | 132   | 131 | 132   | 142 | 157   | 174 | 196   | 215  | 229   |
| 15  | 260  | 250  | 227  | 198  | 165 | 139   | 118 | 108   | 109 | 108   | 118 | 139   | 165 | 198   | 227  | 250   |
| 20  | 289  | 274  | 237  | 198  | 155 | 121   | 97  | 113   | 127 | 113   | 97  | 121   | 155 | 198   | 237  | 274   |
| 25  | 293  | 288  | 249  | 196  | 143 | 103   | 98  | 107   | 95  | 107   | 98  | 103   | 143 | 196   | 249  | 288   |
| 30  | 294  | 279  | 258  | 193  | 131 | 85    | 93  | 52    | 41  | 52    | 93  | 85    | 131 | 193   | 258  | 279   |
| 35  | 292  | 277  | 242  | 188  | 117 | 72    | 52  | 22    | 19  | 22    | 52  | 72    | 117 | 188   | 242  | 277   |
| 40  | 277  | 265  | 235  | 182  | 101 | 61    | 23  | 11    | 11  | 11    | 23  | 61    | 101 | 182   | 235  | 265   |
| 45  | 256  | 243  | 221  | 175  | 84  | 42    | 9   | 6     | 7   | 6     | 9   | 42    | 84  | 175   | 221  | 243   |
| 50  | 234  | 220  | 199  | 157  | 66  | 15    | 4   | 3     | 4   | 3     | 4   | 15    | 66  | 157   | 199  | 220   |
| 55  | 223  | 198  | 172  | 135  | 45  | 4     | 1   | 1     | 2   | 1     | 1   | 4     | 45  | 135   | 172  | 198   |
| 60  | 242  | 205  | 150  | 113  | 18  | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 18  | 113   | 150  | 205   |
| 65  | 230  | 199  | 137  | 86   | 4   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 4   | 86    | 137  | 199   |
| 70  | 201  | 174  | 122  | 46   | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 46    | 122  | 174   |
| 75  | 132  | 115  | 82   | 11   | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 11    | 82   | 115   |
| 80  | 62   | 55   | 33   | 3    | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 3     | 33   | 55    |
| 85  | 30   | 23   | 8    | 0    | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 8    | 23    |
| 90  | 20   | 15   | 3    | 0    | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 0   | 0     | 3    | 15    |
| 95  | 121  | 118  | 111  | 99   | 22  | 73    | 80  | 80    | 79  | 80    | 80  | 73    | 22  | 99    | 111  | 118   |
| 100 | 281  | 278  | 270  | 234  | 74  | 168   | 208 | 217   | 218 | 217   | 208 | 168   | 74  | 234   | 270  | 278   |
| 105 | 458  | 456  | 440  | 347  | 139 | 224   | 319 | 349   | 356 | 349   | 319 | 224   | 139 | 347   | 440  | 456   |
| 110 | 640  | 628  | 561  | 446  | 210 | 298   | 404 | 458   | 474 | 458   | 404 | 298   | 210 | 446   | 561  | 628   |
| 115 | 774  | 748  | 685  | 548  | 283 | 388   | 453 | 540   | 561 | 540   | 453 | 388   | 283 | 548   | 685  | 748   |
| 120 | 885  | 869  | 777  | 628  | 357 | 459   | 505 | 590   | 628 | 590   | 505 | 459   | 357 | 628   | 777  | 869   |
| 125 | 998  | 962  | 869  | 691  | 430 | 522   | 592 | 616   | 648 | 616   | 592 | 522   | 430 | 691   | 869  | 962   |
| 130 | 1061 | 1031 | 953  | 714  | 499 | 587   | 679 | 692   | 699 | 692   | 679 | 587   | 499 | 714   | 953  | 1031  |
| 135 | 1132 | 1108 | 1002 | 724  | 565 | 647   | 742 | 775   | 779 | 775   | 742 | 647   | 565 | 724   | 1002 | 1108  |
| 140 | 1192 | 1149 | 1042 | 751  | 626 | 698   | 779 | 847   | 856 | 847   | 779 | 698   | 626 | 751   | 1042 | 1149  |
| 145 | 1214 | 1179 | 1031 | 793  | 683 | 746   | 815 | 874   | 900 | 874   | 815 | 746   | 683 | 793   | 1031 | 1179  |
| 150 | 1213 | 1161 | 979  | 832  | 734 | 786   | 852 | 888   | 909 | 888   | 852 | 786   | 734 | 832   | 979  | 1161  |
| 155 | 1138 | 1077 | 942  | 845  | 778 | 817   | 871 | 913   | 923 | 913   | 871 | 817   | 778 | 845   | 942  | 1077  |
| 160 | 1029 | 994  | 942  | 839  | 815 | 839   | 886 | 916   | 931 | 916   | 886 | 839   | 815 | 839   | 942  | 994   |
| 165 | 984  | 972  | 930  | 842  | 845 | 858   | 891 | 916   | 925 | 916   | 891 | 858   | 845 | 842   | 930  | 972   |
| 170 | 940  | 920  | 875  | 849  | 867 | 874   | 884 | 902   | 911 | 902   | 884 | 874   | 867 | 849   | 875  | 920   |
| 175 | 868  | 864  | 859  | 865  | 881 | 887   | 884 | 888   | 891 | 888   | 884 | 887   | 881 | 865   | 859  | 864   |
| 180 | 886  | 886  | 886  | 886  | 886 | 886   | 886 | 886   | 886 | 886   | 886 | 886   | 886 | 886   | 886  | 886   |

Zonal Lumen Tabulation (5 degree zones)

| Zone  | Lumens | Zone  | Lumens | Zone    | Lumens | Zone    | Lumens |
|-------|--------|-------|--------|---------|--------|---------|--------|
| 0-5   | 4.4    | 45-50 | 42.8   | 90-95   | 19.5   | 135-140 | 311.4  |
| 5-10  | 12.9   | 50-55 | 39.2   | 95-100  | 80.5   | 140-145 | 294.4  |
| 10-15 | 20.9   | 55-60 | 36.7   | 100-105 | 146.8  | 145-150 | 266.9  |
| 15-20 | 28.6   | 60-65 | 34.9   | 105-110 | 204.4  | 150-155 | 230.7  |
| 20-25 | 36.9   | 65-70 | 31.6   | 110-115 | 250.1  | 155-160 | 189.9  |
| 25-30 | 41.7   | 70-75 | 23.5   | 115-120 | 281.3  | 160-165 | 148.6  |
| 30-35 | 43.8   | 75-80 | 13.1   | 120-125 | 302.1  | 165-170 | 106.4  |
| 35-40 | 44.7   | 80-85 | 5.0    | 125-130 | 313.6  | 170-175 | 63.0   |
| 40-45 | 44.8   | 85-90 | 2.9    | 130-135 | 317.1  | 175-180 | 21.0   |



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| Coefficients of Utilization - Zonal Cavity Method |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Effective Floor Cavity Reflectance 20%            |       |       |       |       |       |       |       |       |       |       |       |       |
| Ceiling Cavity Reflectance                        | 90    |       |       |       | 80    |       |       |       | 70    |       |       |       |
| Wall Reflectance                                  | 70    | 50    | 30    | 10    | 70    | 50    | 30    | 10    | 70    | 50    | 30    | 10    |
| Room Cavity Ratio (RCR)                           |       |       |       |       |       |       |       |       |       |       |       |       |
| 0                                                 | 0.792 | 0.792 | 0.792 | 0.792 | 0.699 | 0.699 | 0.699 | 0.699 | 0.61  | 0.61  | 0.61  | 0.61  |
| 1                                                 | 0.722 | 0.687 | 0.655 | 0.627 | 0.636 | 0.607 | 0.581 | 0.557 | 0.554 | 0.531 | 0.509 | 0.49  |
| 2                                                 | 0.658 | 0.598 | 0.549 | 0.508 | 0.578 | 0.529 | 0.488 | 0.454 | 0.503 | 0.463 | 0.429 | 0.401 |
| 3                                                 | 0.6   | 0.524 | 0.466 | 0.42  | 0.527 | 0.464 | 0.415 | 0.377 | 0.458 | 0.406 | 0.366 | 0.334 |
| 4                                                 | 0.548 | 0.461 | 0.399 | 0.352 | 0.481 | 0.409 | 0.357 | 0.316 | 0.418 | 0.359 | 0.315 | 0.281 |
| 5                                                 | 0.501 | 0.408 | 0.345 | 0.299 | 0.44  | 0.363 | 0.308 | 0.269 | 0.382 | 0.318 | 0.273 | 0.239 |
| 6                                                 | 0.46  | 0.364 | 0.301 | 0.256 | 0.404 | 0.323 | 0.269 | 0.231 | 0.351 | 0.284 | 0.239 | 0.205 |
| 7                                                 | 0.423 | 0.326 | 0.264 | 0.222 | 0.372 | 0.29  | 0.237 | 0.2   | 0.323 | 0.255 | 0.21  | 0.178 |
| 8                                                 | 0.391 | 0.294 | 0.234 | 0.193 | 0.344 | 0.262 | 0.21  | 0.175 | 0.299 | 0.23  | 0.186 | 0.156 |
| 9                                                 | 0.362 | 0.266 | 0.208 | 0.17  | 0.319 | 0.237 | 0.187 | 0.154 | 0.278 | 0.209 | 0.166 | 0.137 |
| 10                                                | 0.337 | 0.242 | 0.187 | 0.15  | 0.296 | 0.216 | 0.168 | 0.136 | 0.258 | 0.191 | 0.149 | 0.121 |

| Ceiling Cavity Reflectance | 50    |       |       |       | 30    |       |       | 10    |       |       | 0     |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Wall Reflectance           | 70    | 50    | 30    | 10    | 50    | 30    | 10    | 50    | 30    | 10    | 0     |
| Room Cavity Ratio (RCR)    |       |       |       |       |       |       |       |       |       |       |       |
| 0                          | 0.445 | 0.445 | 0.445 | 0.445 | 0.293 | 0.293 | 0.293 | 0.154 | 0.154 | 0.154 | 0.089 |
| 1                          | 0.402 | 0.388 | 0.374 | 0.362 | 0.257 | 0.249 | 0.242 | 0.136 | 0.132 | 0.129 | 0.075 |
| 2                          | 0.364 | 0.339 | 0.317 | 0.299 | 0.225 | 0.212 | 0.201 | 0.119 | 0.113 | 0.108 | 0.062 |
| 3                          | 0.331 | 0.298 | 0.272 | 0.25  | 0.198 | 0.183 | 0.17  | 0.105 | 0.098 | 0.092 | 0.052 |
| 4                          | 0.302 | 0.264 | 0.235 | 0.212 | 0.176 | 0.158 | 0.144 | 0.093 | 0.085 | 0.079 | 0.045 |
| 5                          | 0.276 | 0.235 | 0.204 | 0.181 | 0.157 | 0.138 | 0.124 | 0.084 | 0.075 | 0.068 | 0.039 |
| 6                          | 0.254 | 0.21  | 0.179 | 0.156 | 0.141 | 0.122 | 0.107 | 0.076 | 0.066 | 0.059 | 0.034 |
| 7                          | 0.234 | 0.189 | 0.158 | 0.136 | 0.127 | 0.108 | 0.094 | 0.069 | 0.059 | 0.052 | 0.03  |
| 8                          | 0.217 | 0.171 | 0.141 | 0.119 | 0.115 | 0.096 | 0.082 | 0.063 | 0.053 | 0.046 | 0.027 |
| 9                          | 0.202 | 0.156 | 0.126 | 0.105 | 0.105 | 0.086 | 0.073 | 0.058 | 0.048 | 0.041 | 0.024 |
| 10                         | 0.188 | 0.142 | 0.113 | 0.093 | 0.096 | 0.078 | 0.065 | 0.053 | 0.044 | 0.037 | 0.022 |

Average Luminance Table (cd/m<sup>2</sup>)

|    | 0     | 45    | 90   |
|----|-------|-------|------|
| 0  | 7131  | 7131  | 7131 |
| 45 | 11515 | 10483 | 4591 |
| 55 | 11474 | 9506  | 3069 |
| 65 | 14276 | 9446  | 360  |
| 75 | 10820 | 7763  | 0    |
| 85 | 3772  | 1329  | 0    |

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 values should be used with caution.

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.

