

# King's Cross Triangle W Zone

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## External Lighting Calculation

Kian Gheidi

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Rev.C01

Reference No. KXC-TRI-ZZ-001-E-ARK060-63-902

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## INTRODUCTION

This report was compiled together to undertake an analysis of the proposed lighting scheme for the Landlords external areas at King's Cross Triangle.

The purpose of this analysis is to assess the proposed lighting schemes abilities to meet statutory and regulated standards and to investigate the acceptability of the scheme.

The exterior lighting design and specification for this project is defined by 18 Degrees architectural Lighting Design, and their specification should be referred.

For clarification of lighting layout please refer to the following drawing numbers:

- KXC-TRI-XX-001-E-ARK060-63-100
- KXC-TRI-XX-001-E-ARK060-63-101

For clarification of luminaire specifications please refer to the technical submittals and schedule number:

- KXC-TRI-ZZ-001-E-ARK060-63-705

## 1 - AIMS AND OBJECTIVES

The following aims and objective are intended on being ascertained from this report;

- i. The lighting schemes task lighting levels
- ii. The lighting schemes emergency lighting levels
- iii. Compare and contrast the task and emergency lighting levels with statutory and specified standards

## **2 - STATUTORY AND SPECIFIED STANDARDS**

### **2.1 - Task Lighting:**

#### **2.1.1 - Statutory Documents**

- Hoar Lea specification V21 GENERAL LIGHTING
- BS 1853-2 Tubular fluorescent lamps for general lighting service. Part 2: Specification for lamps used in the United Kingdom not included in BS EN 60081, BS EN 60901, BS EN 61195 and BS EN 61199
- BS 6972 Specification for general requirements for luminaire supporting couplers for domestic, light industrial and commercial use
- BS EN 12464-2 Light and lighting. Lighting of work places Part 2: Outdoor work places
- CIBSE Code for Lighting

## **2.2 - Emergency Lighting:**

### **2.2.1 - Statutory Documents**

- Hoare Lea specification V40 EMERGENCY LIGHTING
- BS 5266-1 Emergency lighting Part 1: Code of practice for the emergency lighting of premises
- BS 6972 Specification for general requirements for luminaire supporting couplers for domestic, light industrial and commercial use
- BS 5266 Emergency lighting
- BS EN 1838 Lighting applications. Emergency lighting
- BS EN 50172 Emergency escape lighting systems
- BS EN 60598-2-22 Luminaires Particular Requirements. Luminaires for emergency lighting

### 3 – EXTERNAL LIGHTING CALCULATION REPORT

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Kingscross external lighting calculation

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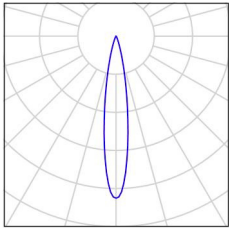
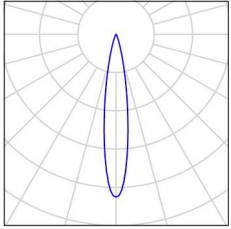
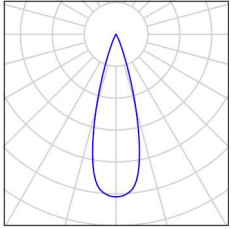
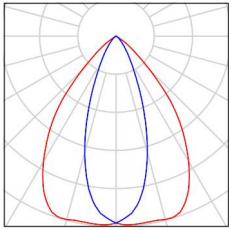
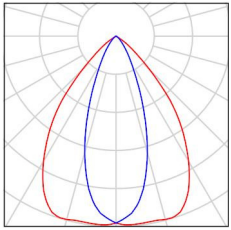
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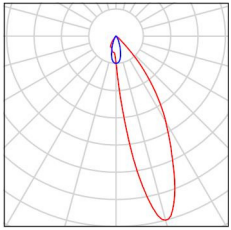
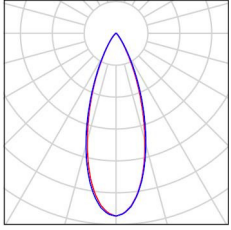
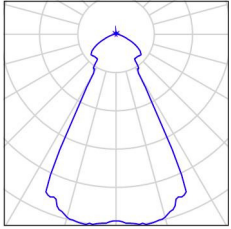
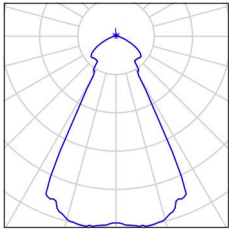
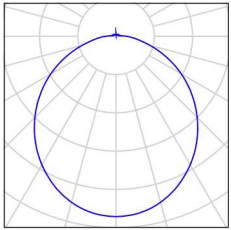
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Kingscross external lighting calculation / Luminaire parts list

|           |                                                                                                                                                                                                                                                                                                                                                                                                |                                                          |                                                                                       |
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| 10 Pieces | <p>ERCO GmbH 80178000_V02 Quintessence Directional luminaire<br/>Article No.: 80178000_V02<br/>Luminous flux (Luminaire): 0 lm<br/>Luminous flux (Lamps): 0 lm<br/>Luminaire Wattage: 0.0 W<br/>Emergency Lighting: 501 lm, 8.8 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 99 100 100 100 100<br/>Fitting: 1 x LED 6.0W warm white (Correction Factor 1.000).</p> | See our luminaire catalog for an image of the luminaire. |    |
| 30 Pieces | <p>ERCO GmbH 80178000_V02 Quintessence Directional luminaire<br/>Article No.: 80178000_V02<br/>Luminous flux (Luminaire): 501 lm<br/>Luminous flux (Lamps): 501 lm<br/>Luminaire Wattage: 8.8 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 99 100 100 100 100<br/>Fitting: 1 x LED 6.0W warm white (Correction Factor 1.000).</p>                                   | See our luminaire catalog for an image of the luminaire. |   |
| 4 Pieces  | <p>ERCO GmbH 80182000_V02 Quintessence Directional luminaire<br/>Article No.: 80182000_V02<br/>Luminous flux (Luminaire): 501 lm<br/>Luminous flux (Lamps): 501 lm<br/>Luminaire Wattage: 8.8 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 99 100 100 100 100<br/>Fitting: 1 x LED 6.0W warm white (Correction Factor 1.000).</p>                                   | See our luminaire catalog for an image of the luminaire. |  |
| 38 Pieces | <p>ERCO GmbH 84435000_V05 Compact Downlight oval flood<br/>Article No.: 84435000_V05<br/>Luminous flux (Luminaire): 661 lm<br/>Luminous flux (Lamps): 661 lm<br/>Luminaire Wattage: 11.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 89 99 100 100 100<br/>Fitting: 1 x LED 8W warm white (Correction Factor 1.000).</p>                                           | See our luminaire catalog for an image of the luminaire. |  |
| 1 Pieces  | <p>ERCO GmbH 84435000_V05 Compact Downlight oval flood<br/>Article No.: 84435000_V05<br/>Luminous flux (Luminaire): 0 lm<br/>Luminous flux (Lamps): 0 lm<br/>Luminaire Wattage: 0.0 W<br/>Emergency Lighting: 661 lm, 11.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 89 99 100 100 100<br/>Fitting: 1 x LED 8W warm white (Correction Factor 1.000).</p>         | See our luminaire catalog for an image of the luminaire. |  |

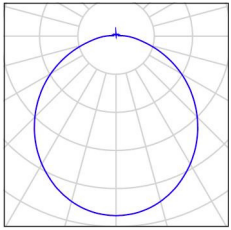
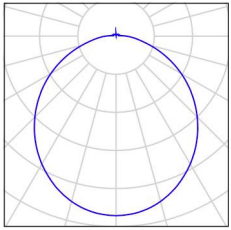
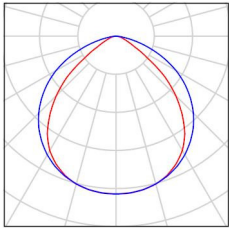
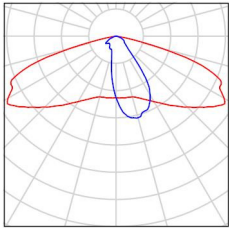
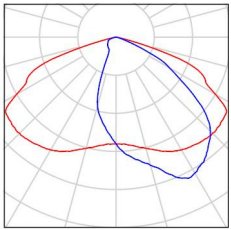
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Kingscross external lighting calculation / Luminaire parts list

|            |                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                          |                                                                                       |
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| 228 Pieces | LightGraphix LD43A-C1-500-LW30-MB LD43A-C1<br>Article No.: LD43A-C1-500-LW30-MB<br>Luminous flux (Luminaire): 80 lm<br>Luminous flux (Lamps): 80 lm<br>Luminaire Wattage: 1.7 W<br>Luminaire classification according to CIE: 100<br>CIE flux code: 94 100 100 100 100<br>Fitting: 1 x C1 (Correction Factor 1.000).                                                                                                | See our luminaire catalog for an image of the luminaire. |    |
| 20 Pieces  | LP 45033030-930-30-0 45033030-930-30-0 1050mA LEDStar 3<br>Spotlight XP-G3 90+CRI 3000K 30Å°<br>Article No.: 45033030-930-30-0<br>Luminous flux (Luminaire): 557 lm<br>Luminous flux (Lamps): 557 lm<br>Luminaire Wattage: 9.5 W<br>Luminaire classification according to CIE: 100<br>CIE flux code: 96 99 100 100 100<br>Fitting: 1 x User defined (Correction Factor 1.000).                                      | See our luminaire catalog for an image of the luminaire. |   |
| 228 Pieces | Lumino Lighting V20S-CDE0505-U1RCB V20S CLEAR ColorCORE®<br>LED Gen II 3000K 500mm 6WM<br>Article No.: V20S-CDE0505-U1RCB<br>Luminous flux (Luminaire): 216 lm<br>Luminous flux (Lamps): 216 lm<br>Luminaire Wattage: 3.0 W<br>Luminaire classification according to CIE: 98<br>CIE flux code: 68 88 98 98 57<br>Fitting: 1 x ColorCORE® LED Gen II (Correction Factor 1.000).                                      | See our luminaire catalog for an image of the luminaire. |  |
| 2 Pieces   | Lumino Lighting V20S-CDE0505-U1RCB V20S CLEAR ColorCORE®<br>LED Gen II 3000K 500mm 6WM<br>Article No.: V20S-CDE0505-U1RCB<br>Luminous flux (Luminaire): 216 lm<br>Luminous flux (Lamps): 216 lm<br>Luminaire Wattage: 3.0 W<br>Emergency Lighting: 216 lm, 3.0 W<br>Luminaire classification according to CIE: 98<br>CIE flux code: 68 88 98 98 57<br>Fitting: 1 x ColorCORE® LED Gen II (Correction Factor 1.000). | See our luminaire catalog for an image of the luminaire. |  |
| 348 Pieces | Lumino Lighting V36S-CDD0500-U1SCB V36S OPAL ColorCORE®<br>LED Gen II 3000K 500mm 12WM<br>Article No.: V36S-CDD0500-U1SCB<br>Luminous flux (Luminaire): 288 lm<br>Luminous flux (Lamps): 288 lm<br>Luminaire Wattage: 6.0 W<br>Luminaire classification according to CIE: 96<br>CIE flux code: 46 77 94 96 96<br>Fitting: 1 x ColorCORE® LED Gen II (Correction Factor 1.000).                                      | See our luminaire catalog for an image of the luminaire. |  |

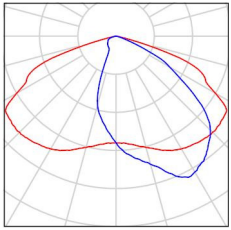
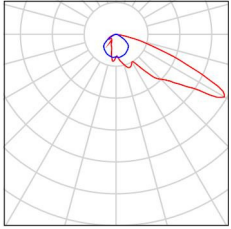
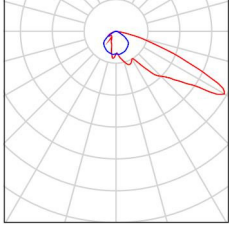
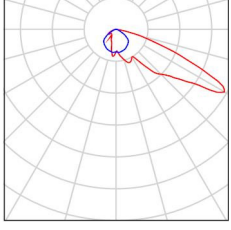
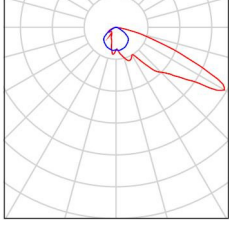
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Kingscross external lighting calculation / Luminaire parts list

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|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 Pieces  | <p>Lumino Lighting V36S-CDD0500-U1SCB V36S OPAL ColorCORE®<br/>LED Gen II 3000K 500mm 12WM<br/>Article No.: V36S-CDD0500-U1SCB<br/>Luminous flux (Luminaire): 288 lm<br/>Luminous flux (Lamps): 288 lm<br/>Luminaire Wattage: 6.0 W<br/>Emergency Lighting: 288 lm, 6.0 W<br/>Luminaire classification according to CIE: 96<br/>CIE flux code: 46 77 94 96 96<br/>Fitting: 1 x ColorCORE® LED Gen II (Correction Factor 1.000).</p>             | See our luminaire catalog for an image of the luminaire. |    |
| 27 Pieces | <p>Lumino Lighting V36S-CDD0500-U1SCB V36S OPAL ColorCORE®<br/>LED Gen II 3000K 500mm 12WM<br/>Article No.: V36S-CDD0500-U1SCB<br/>Luminous flux (Luminaire): 0 lm<br/>Luminous flux (Lamps): 0 lm<br/>Luminaire Wattage: 0.0 W<br/>Emergency Lighting: 288 lm, 6.0 W<br/>Luminaire classification according to CIE: 96<br/>CIE flux code: 46 77 94 96 96<br/>Fitting: 1 x ColorCORE® LED Gen II (Correction Factor 1.000).</p>                 | See our luminaire catalog for an image of the luminaire. |   |
| 18 Pieces | <p>Mike Stoane Lighting Clear Cover MSL_Exterior LED<br/>Channel_500mm_G3.2 Standard Output Strip_90CRI_1496lm.m_Clear<br/>cover<br/>Article No.: Clear Cover<br/>Luminous flux (Luminaire): 556 lm<br/>Luminous flux (Lamps): 551 lm<br/>Luminaire Wattage: 8.4 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 56 88 98 100 101<br/>Fitting: 1 x User defined (Correction Factor 1.000).</p>                          | See our luminaire catalog for an image of the luminaire. |  |
| 26 Pieces | <p>WE-EF;Eulumdat2 108-1625 PFL230 [P65] IP66:LED-<br/>12/24W/3K;PFL230 LED, Street and Area Lighting<br/>Article No.: 108-1625<br/>Luminous flux (Luminaire): 2635 lm<br/>Luminous flux (Lamps): 3480 lm<br/>Luminaire Wattage: 27.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 42 77 97 100 76<br/>Fitting: 12 x LED-12/24W/830 - 3000K (Correction Factor 1.000).</p>                                           | See our luminaire catalog for an image of the luminaire. |  |
| 14 Pieces | <p>WE-EF;Eulumdat2 108-1660 PIA230 [S65] IP66:LED-<br/>12/24W/3K;PIA230 LED, Wall Luminaires / Surface Mounted<br/>Article No.: 108-1660<br/>Luminous flux (Luminaire): 0 lm<br/>Luminous flux (Lamps): 0 lm<br/>Luminaire Wattage: 0.0 W<br/>Emergency Lighting: 2780 lm, 27.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 43 79 98 100 80<br/>Fitting: 12 x LED-12/24W/830 - 3000K (Correction Factor 1.000).</p> | See our luminaire catalog for an image of the luminaire. |  |

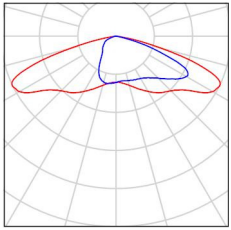
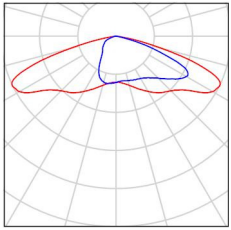
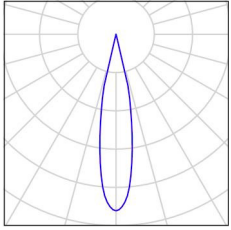
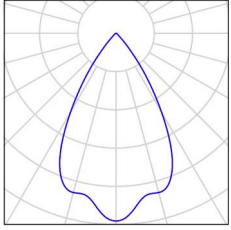
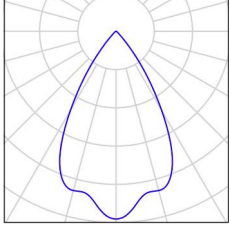
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Kingscross external lighting calculation / Luminaire parts list

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| 14 Pieces | <p>WE-EF;Eulumdat2 108-1660 PIA230 [S65] IP66:LED-12/24W/3K;PIA230 LED, Wall Luminaires / Surface Mounted</p> <p>Article No.: 108-1660</p> <p>Luminous flux (Luminaire): 2780 lm</p> <p>Luminous flux (Lamps): 3480 lm</p> <p>Luminaire Wattage: 27.0 W</p> <p>Luminaire classification according to CIE: 100</p> <p>CIE flux code: 43 79 98 100 80</p> <p>Fitting: 12 x LED-12/24W/830 - 3000K (Correction Factor 1.000).</p>                                     | See our luminaire catalog for an image of the luminaire. |    |
| 2 Pieces  | <p>WE-EF;Eulumdat2 108-1666 PIA230 [A60] IP66:LED-12/24W/3K;PIA230 LED, Wall Luminaires / Surface Mounted</p> <p>Article No.: 108-1666</p> <p>Luminous flux (Luminaire): 0 lm</p> <p>Luminous flux (Lamps): 0 lm</p> <p>Luminaire Wattage: 0.0 W</p> <p>Emergency Lighting: 2606 lm, 27.0 W</p> <p>Luminaire classification according to CIE: 100</p> <p>CIE flux code: 30 65 96 100 75</p> <p>Fitting: 12 x LED-12/24W/830 - 3000K (Correction Factor 1.000).</p> | See our luminaire catalog for an image of the luminaire. |   |
| 2 Pieces  | <p>WE-EF;Eulumdat2 108-1666 PIA230 [A60] IP66:LED-12/24W/3K;PIA230 LED, Wall Luminaires / Surface Mounted</p> <p>Article No.: 108-1666</p> <p>Luminous flux (Luminaire): 2606 lm</p> <p>Luminous flux (Lamps): 3480 lm</p> <p>Luminaire Wattage: 27.0 W</p> <p>Luminaire classification according to CIE: 100</p> <p>CIE flux code: 30 65 96 100 75</p> <p>Fitting: 12 x LED-12/24W/830 - 3000K (Correction Factor 1.000).</p>                                     | See our luminaire catalog for an image of the luminaire. |  |
| 8 Pieces  | <p>WE-EF;Eulumdat2 108-1751 PIA230 [A60] IP66:LED-18/36W/3K;PIA230 LED, Wall Luminaires / Surface Mounted</p> <p>Article No.: 108-1751</p> <p>Luminous flux (Luminaire): 0 lm</p> <p>Luminous flux (Lamps): 0 lm</p> <p>Luminaire Wattage: 0.0 W</p> <p>Emergency Lighting: 3910 lm, 41.0 W</p> <p>Luminaire classification according to CIE: 100</p> <p>CIE flux code: 30 65 96 100 75</p> <p>Fitting: 18 x LED-18/36W/830 - 3000K (Correction Factor 1.000).</p> | See our luminaire catalog for an image of the luminaire. |  |
| 6 Pieces  | <p>WE-EF;Eulumdat2 108-1751 PIA230 [A60] IP66:LED-18/36W/3K;PIA230 LED, Wall Luminaires / Surface Mounted</p> <p>Article No.: 108-1751</p> <p>Luminous flux (Luminaire): 3910 lm</p> <p>Luminous flux (Lamps): 5220 lm</p> <p>Luminaire Wattage: 41.0 W</p> <p>Luminaire classification according to CIE: 100</p> <p>CIE flux code: 30 65 96 100 75</p> <p>Fitting: 18 x LED-18/36W/830 - 3000K (Correction Factor 1.000).</p>                                     | See our luminaire catalog for an image of the luminaire. |  |

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|           |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                          |                                                                                       |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------|
| 6 Pieces  | <p>WE-EF;Eulumdat2 108-1783 PFL230 [R65] IP66:LED-18/18W/3K;PFL230 LED, Street and Area Lighting<br/>Article No.: 108-1783<br/>Luminous flux (Luminaire): 0 lm<br/>Luminous flux (Lamps): 0 lm<br/>Luminaire Wattage: 0.0 W<br/>Emergency Lighting: 2010 lm, 21.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 31 66 96 100 72<br/>Fitting: 18 x LED-18/18W/830 - 3000K (Correction Factor 1.000).</p> | See our luminaire catalog for an image of the luminaire. |    |
| 8 Pieces  | <p>WE-EF;Eulumdat2 108-1783 PFL230 [R65] IP66:LED-18/18W/3K;PFL230 LED, Street and Area Lighting<br/>Article No.: 108-1783<br/>Luminous flux (Luminaire): 2010 lm<br/>Luminous flux (Lamps): 2790 lm<br/>Luminaire Wattage: 21.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 31 66 96 100 72<br/>Fitting: 18 x LED-18/18W/830 - 3000K (Correction Factor 1.000).</p>                                  | See our luminaire catalog for an image of the luminaire. |   |
| 4 Pieces  | <p>WE-EF;Eulumdat2 139-1886 FLC230 [FP] IP66:LED-12/52W/3K - max aperture angle;FLC230-GOBO LED-max, Projectors<br/>Article No.: 139-1886<br/>Luminous flux (Luminaire): 3104 lm<br/>Luminous flux (Lamps): 6600 lm<br/>Luminaire Wattage: 55.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 100 100 100 100 47<br/>Fitting: 12 x LED-12/52W/830 - 3000K (Correction Factor 1.000).</p>                | See our luminaire catalog for an image of the luminaire. |  |
| 33 Pieces | <p>WE-EF;Eulumdat2 139-1909_us FLC230 [W] IP66:LED-12/36W/3K;FLC230 LED, Projectors<br/>Article No.: 139-1909_us<br/>Luminous flux (Luminaire): 4433 lm<br/>Luminous flux (Lamps): 5160 lm<br/>Luminaire Wattage: 41.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 95 99 100 100 86<br/>Fitting: 12 x 12 LED 36W/830 (3000K) (Correction Factor 1.000).</p>                                           | See our luminaire catalog for an image of the luminaire. |  |
| 1 Pieces  | <p>WE-EF;Eulumdat2 139-1909_us FLC230 [W] IP66:LED-12/36W/3K;FLC230 LED, Projectors<br/>Article No.: 139-1909_us<br/>Luminous flux (Luminaire): 0 lm<br/>Luminous flux (Lamps): 0 lm<br/>Luminaire Wattage: 0.0 W<br/>Emergency Lighting: 4433 lm, 41.0 W<br/>Luminaire classification according to CIE: 100<br/>CIE flux code: 95 99 100 100 86<br/>Fitting: 12 x 12 LED 36W/830 (3000K) (Correction Factor 1.000).</p>          | See our luminaire catalog for an image of the luminaire. |  |

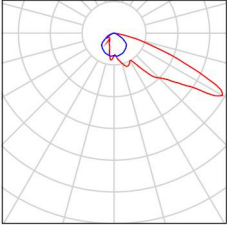
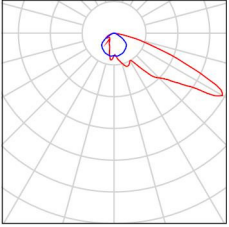
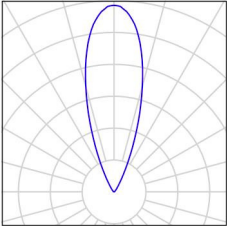
Operator

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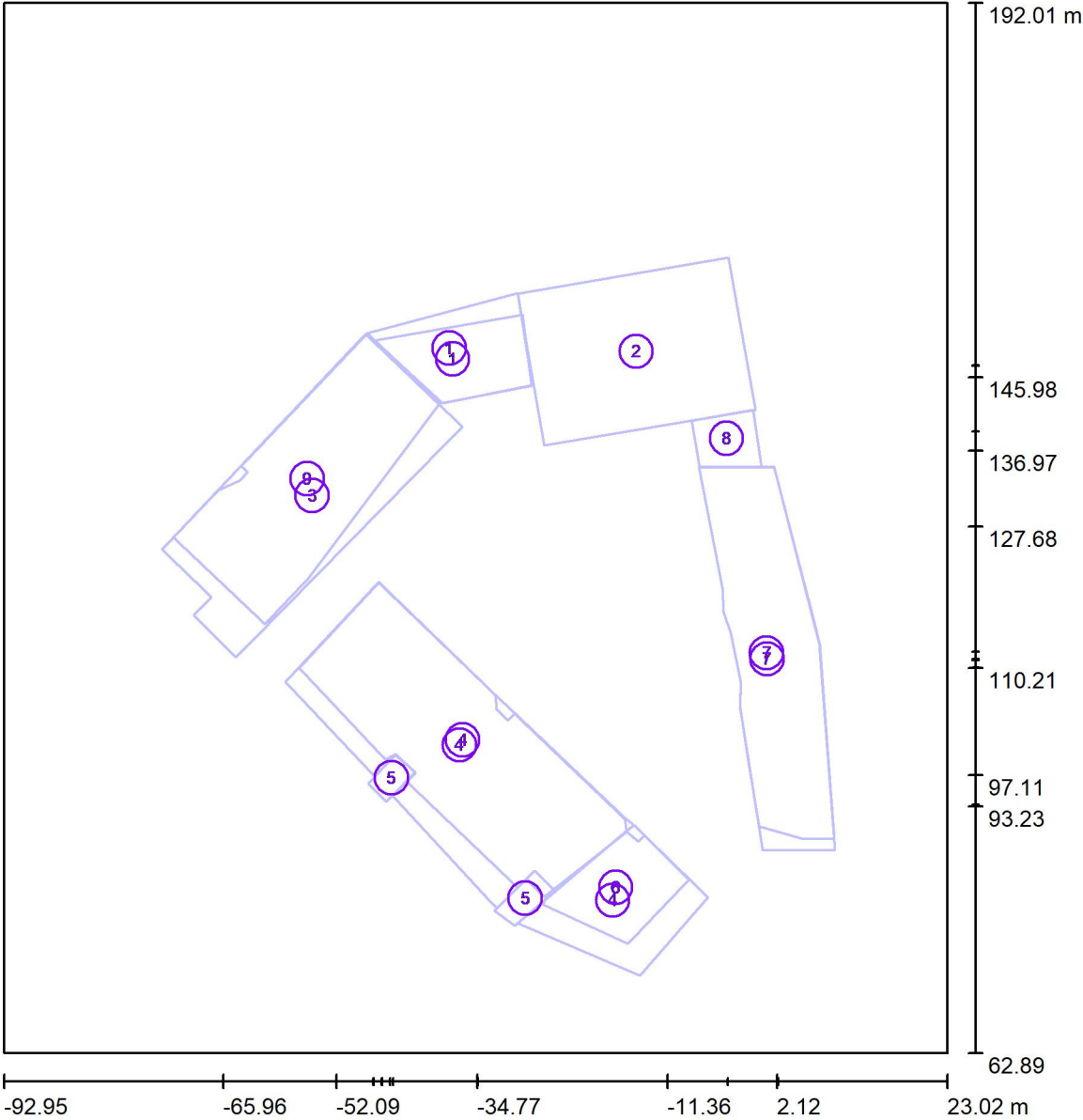
e-Mail

Kingscross external lighting calculation / Luminaire parts list

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                          |                                                                                       |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 Pieces  | <p>WE-EF;Eulumdat2 147-0689_us FLA730 [A60] IP66:LED-12/24W/3K;FLA730 LED, Area Floodlights</p> <p>Article No.: 147-0689_us</p> <p>Luminous flux (Luminaire): 0 lm</p> <p>Luminous flux (Lamps): 0 lm</p> <p>Luminaire Wattage: 0.0 W</p> <p>Emergency Lighting: 2606 lm, 27.0 W</p> <p>Luminaire classification according to CIE: 100</p> <p>CIE flux code: 30 65 96 100 75</p> <p>Fitting: 12 x 12 LED 24W/830 (3000K) (Correction Factor 1.000).</p> | See our luminaire catalog for an image of the luminaire. |    |
| 1 Pieces  | <p>WE-EF;Eulumdat2 147-0689_us FLA730 [A60] IP66:LED-12/24W/3K;FLA730 LED, Area Floodlights</p> <p>Article No.: 147-0689_us</p> <p>Luminous flux (Luminaire): 2606 lm</p> <p>Luminous flux (Lamps): 3480 lm</p> <p>Luminaire Wattage: 27.0 W</p> <p>Luminaire classification according to CIE: 100</p> <p>CIE flux code: 30 65 96 100 75</p> <p>Fitting: 12 x 12 LED 24W/830 (3000K) (Correction Factor 1.000).</p>                                     | See our luminaire catalog for an image of the luminaire. |   |
| 40 Pieces | <p>WE-EF;Eulumdat2 185-2446 ETC130-GB [M] VA:IP67:LED-12/18W/3K;ETC130-GB LED, Inground Luminaires</p> <p>Article No.: 185-2446</p> <p>Luminous flux (Luminaire): 2237 lm</p> <p>Luminous flux (Lamps): 2580 lm</p> <p>Luminaire Wattage: 21.0 W</p> <p>Luminaire classification according to CIE: 0</p> <p>CIE flux code: 00 00 12 00 87</p> <p>Fitting: 12 x LED-12/18W/830 - 3000K (Correction Factor 1.000).</p>                                    | See our luminaire catalog for an image of the luminaire. |  |

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EMERGENCY LIGHTING CALCULATION / Objects (layout plan)



Scale 1 : 874

Object parts list

| No. | Pieces | Designation      |
|-----|--------|------------------|
| 1   | 2      | Block W1         |
| 2   | 1      | Block W1E        |
| 3   | 1      | Block W1W Canopy |
| 4   | 3      | Block W2         |



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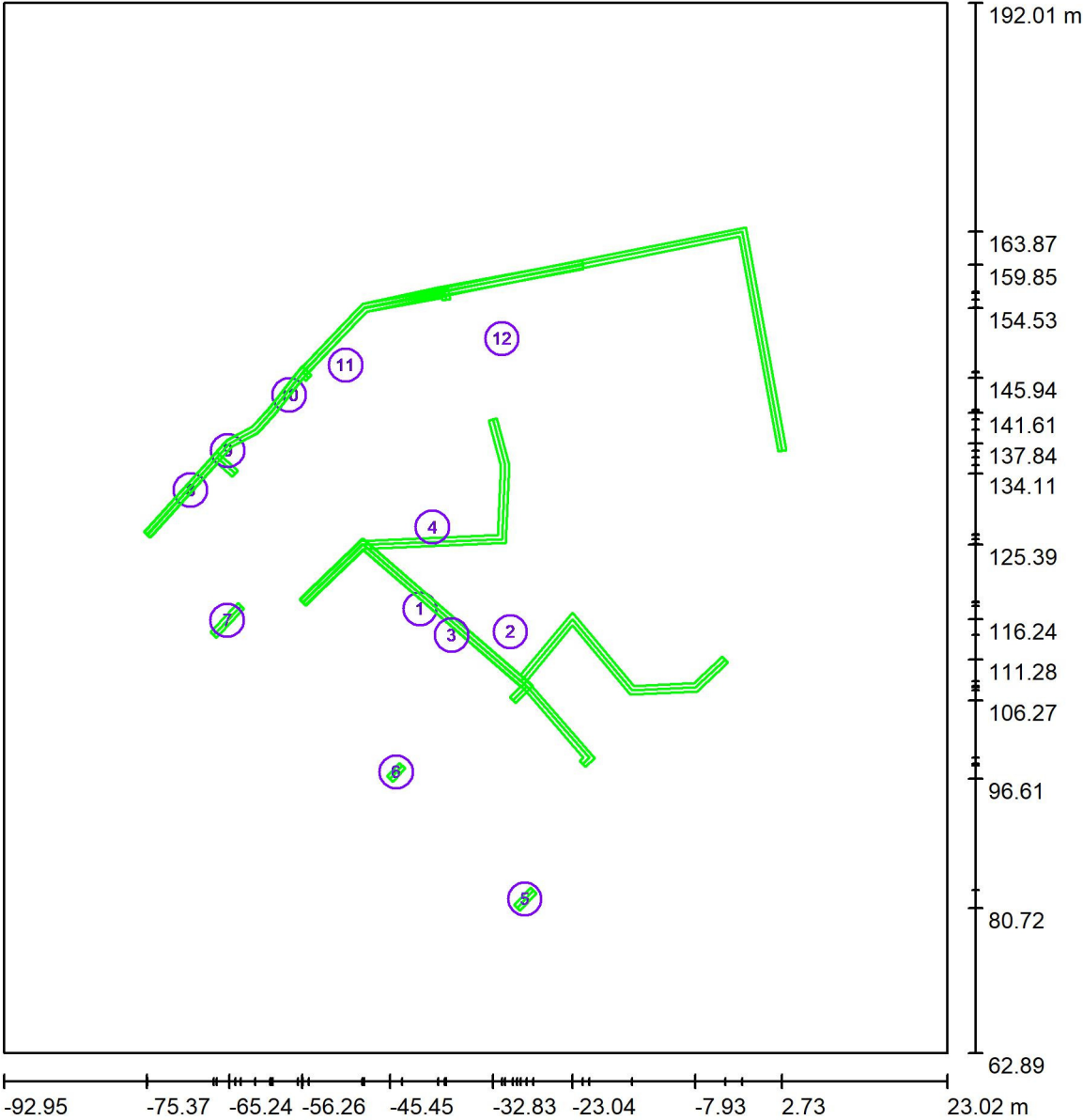
**EMERGENCY LIGHTING CALCULATION / Objects (layout plan)**

**Object parts list**

| No. | Pieces | Designation                |
|-----|--------|----------------------------|
| 5   | 2      | Block W2 Canopy            |
| 6   | 1      | Block W2S                  |
| 7   | 2      | Block W3                   |
| 8   | 1      | Block W3 - Felexible space |
| 9   | 1      | BlockW1W                   |

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EMERGENCY LIGHTING CALCULATION / EMERGENCY / Escape Routes (Coordinates List)



Scale 1 : 874

Escape route list

| No. | Designation          | Position [m] |         |       | Size [m] |        | Rotation [°] |       |       |
|-----|----------------------|--------------|---------|-------|----------|--------|--------------|-------|-------|
|     |                      | X            | Y       | Z     | L        | W      | X            | Y     | Z     |
| 1   | W2N PODIUM EXIT PATH | -41.766      | 117.504 | 0.000 | 28.607   | 20.213 | 0.000        | 0.000 | 0.000 |
| 2   | W3 PODIUM EXIT PATH  | -30.665      | 114.692 | 0.000 | 52.675   | 19.121 | 0.000        | 0.000 | 0.000 |
| 3   | W2S PODIUM EXIT PATH | -37.911      | 114.288 | 0.000 | 36.238   | 27.963 | 0.000        | 0.000 | 0.000 |
| 4   | W1 PODIUM EXIT PATH  | -40.231      | 127.551 | 0.000 | 25.708   | 23.004 | 0.000        | 0.000 | 0.000 |

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EMERGENCY LIGHTING CALCULATION / EMERGENCY / Escape Routes (Coordinates List)

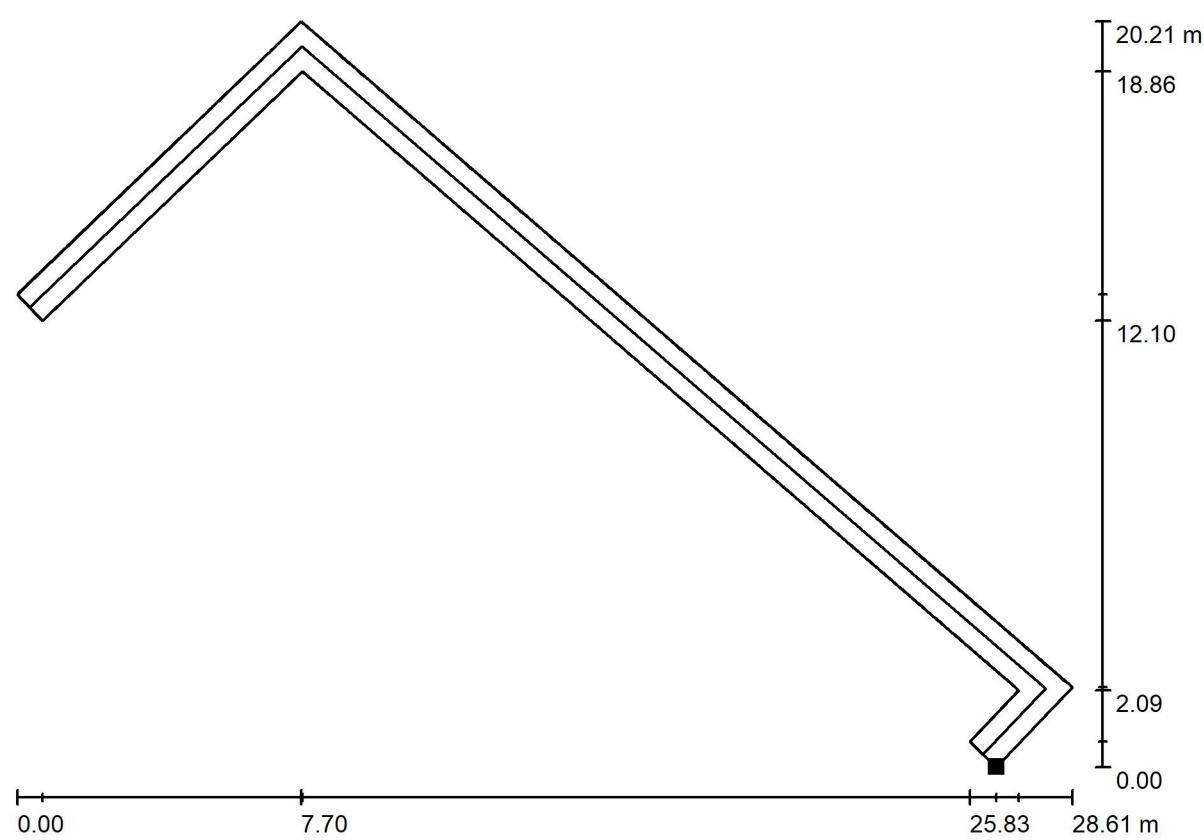
Escape route list

| No. | Designation                 | Position [m] |         |       | Size [m] |        | Rotation [°] |       |       |
|-----|-----------------------------|--------------|---------|-------|----------|--------|--------------|-------|-------|
|     |                             | X            | Y       | Z     | L        | W      | X            | Y     | Z     |
| 5   | W2S FRONT EXIT PATH         | -28.892      | 81.814  | 0.000 | 2.738    | 2.859  | 0.000        | 0.000 | 0.000 |
| 6   | W2N FRONT EXIT PATH         | -44.711      | 97.427  | 0.000 | 2.216    | 2.308  | 0.000        | 0.000 | 0.000 |
| 7   | W1E FRONT EXIT PATH         | -65.496      | 116.101 | 0.000 | 4.108    | 4.268  | 0.000        | 0.000 | 0.000 |
| 8   | W1W FRONT EXIT PATH         | -70.006      | 132.114 | 0.000 | 11.533   | 10.511 | 0.000        | 0.000 | 0.000 |
| 9   | W1E BACK CAR PARK EXIT PATH | -65.403      | 136.972 | 0.000 | 20.583   | 21.079 | 0.000        | 0.000 | 0.000 |
| 10  | W1E CAR PARK EXIT PATH      | -57.890      | 143.823 | 0.000 | 37.613   | 30.620 | 0.000        | 0.000 | 0.000 |
| 11  | W1E BACK EXIT PATH          | -50.939      | 147.470 | 0.000 | 54.034   | 34.041 | 0.000        | 0.000 | 0.000 |
| 12  | W3 REAR EXIT PATH           | -31.711      | 150.730 | 0.000 | 78.910   | 38.129 | 0.000        | 0.000 | 0.000 |

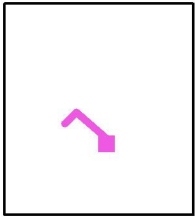


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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W2N PODIUM EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-30.021 m, 105.926 m, 0.000 m)



Values in Lux, Scale 1 : 205

Grid: 128 x 128 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 5.37          | 2.09           | 10             | 0.389 | 0.200               |

Centre line:  $E_{min}$ : 2.09 lx,  $E_{min} / E_{max}$ : 0.23 (1 : 4.37).

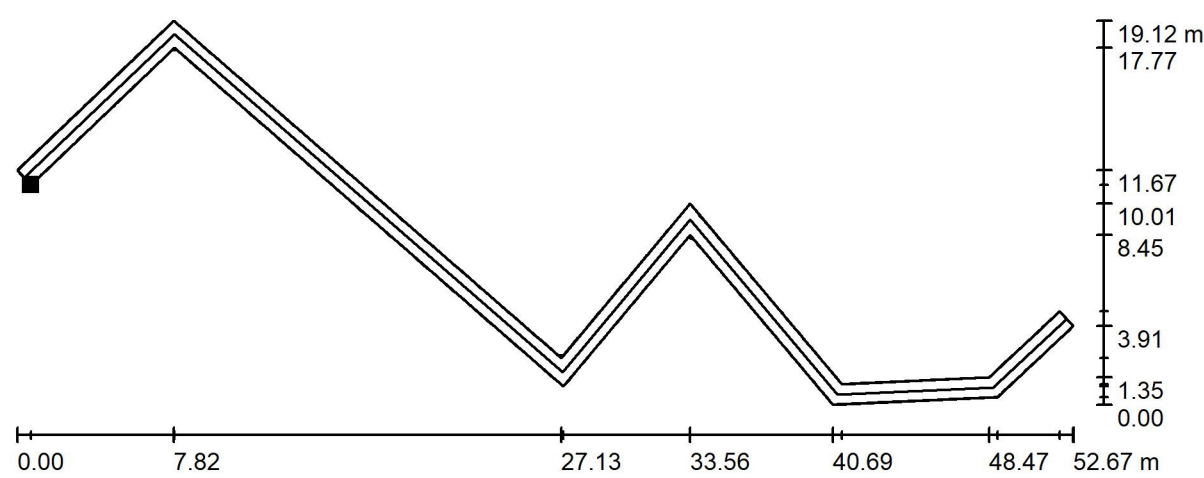
Operator

Telephone

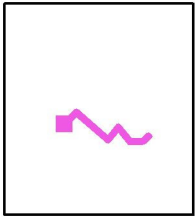
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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W3 PODIUM EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-55.916 m, 117.951 m, 0.000 m)



Values in Lux, Scale 1 : 377

Grid: 128 x 64 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 4.12          | 1.10           | 10             | 0.266 | 0.106               |

Centre line:  $E_{min}$ : 1.10 lx,  $E_{min} / E_{max}$ : 0.11 (1 : 8.78).

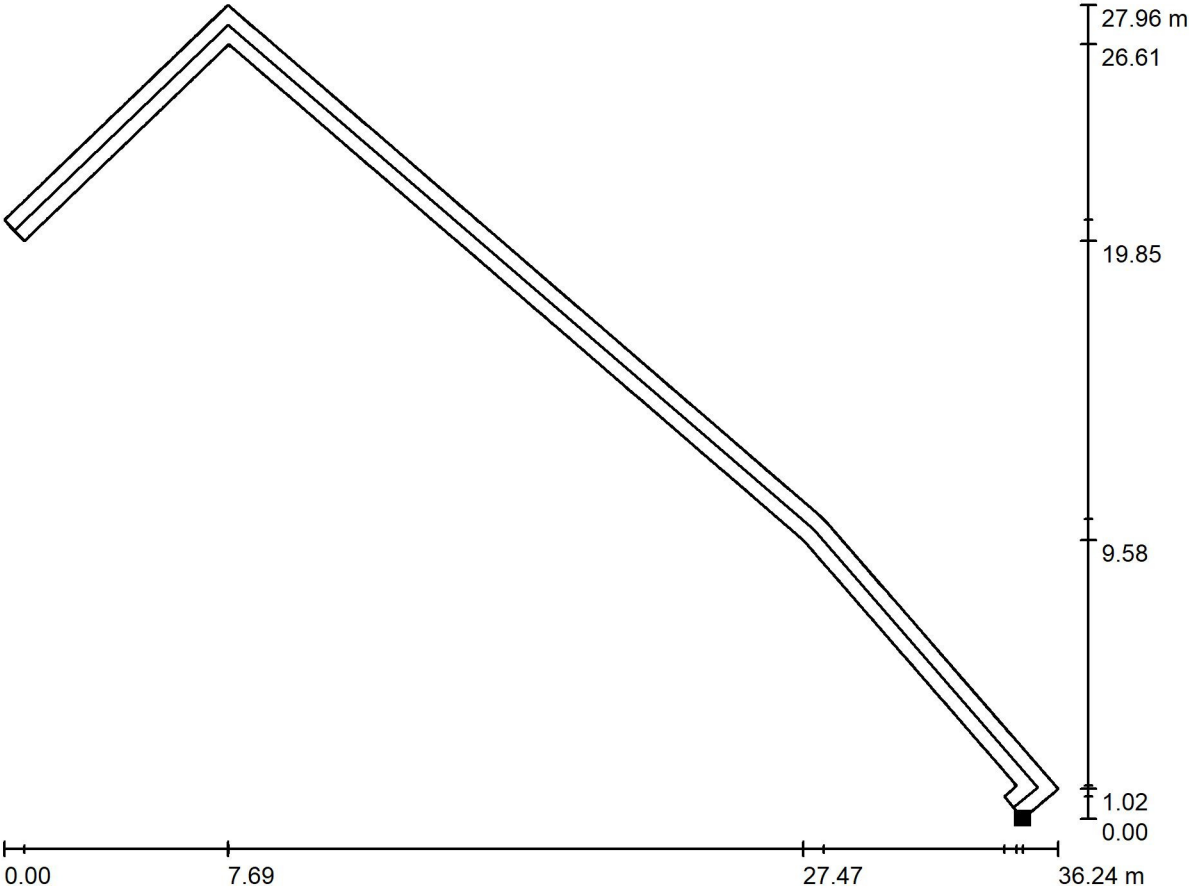
Operator

Telephone

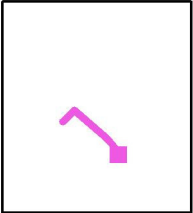
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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W2S PODIUM EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-21.501 m, 98.106 m, 0.000 m)



Values in Lux, Scale 1 : 260

Grid: 128 x 64 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 6.14          | 1.98           | 11             | 0.322 | 0.175               |

Centre line:  $E_{min}$ : 2.11 lx,  $E_{min} / E_{max}$ : 0.19 (1 : 5.36).

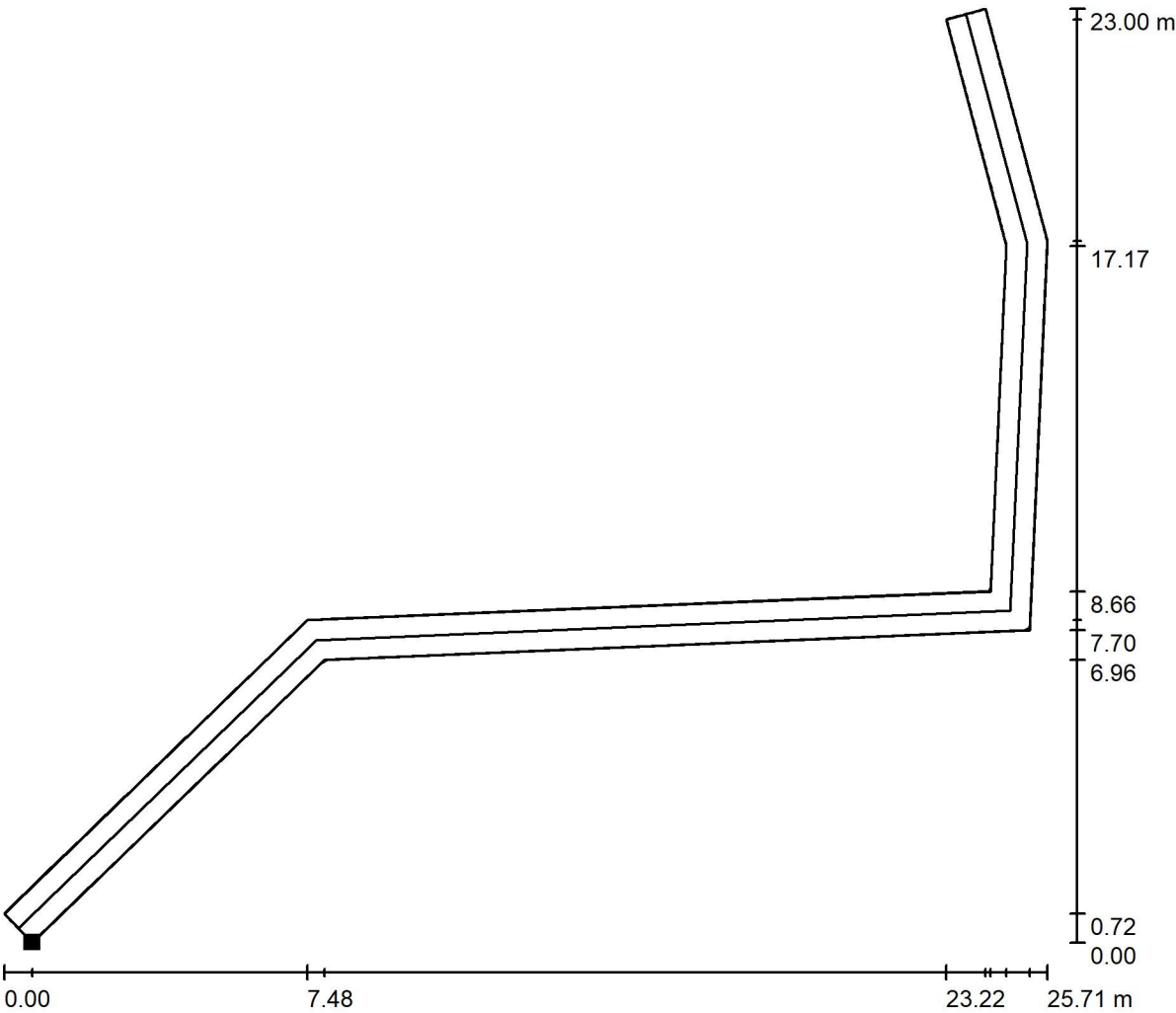
Operator

Telephone

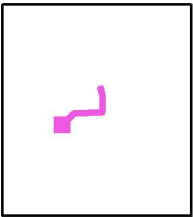
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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W1 PODIUM EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-55.842 m, 117.940 m, 0.000 m)



Values in Lux, Scale 1 : 184

Grid: 128 x 128 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 3.81          | 2.12           | 6.76           | 0.558 | 0.314               |

Centre line:  $E_{min}$ : 2.34 lx,  $E_{min} / E_{max}$ : 0.37 (1 : 2.70).

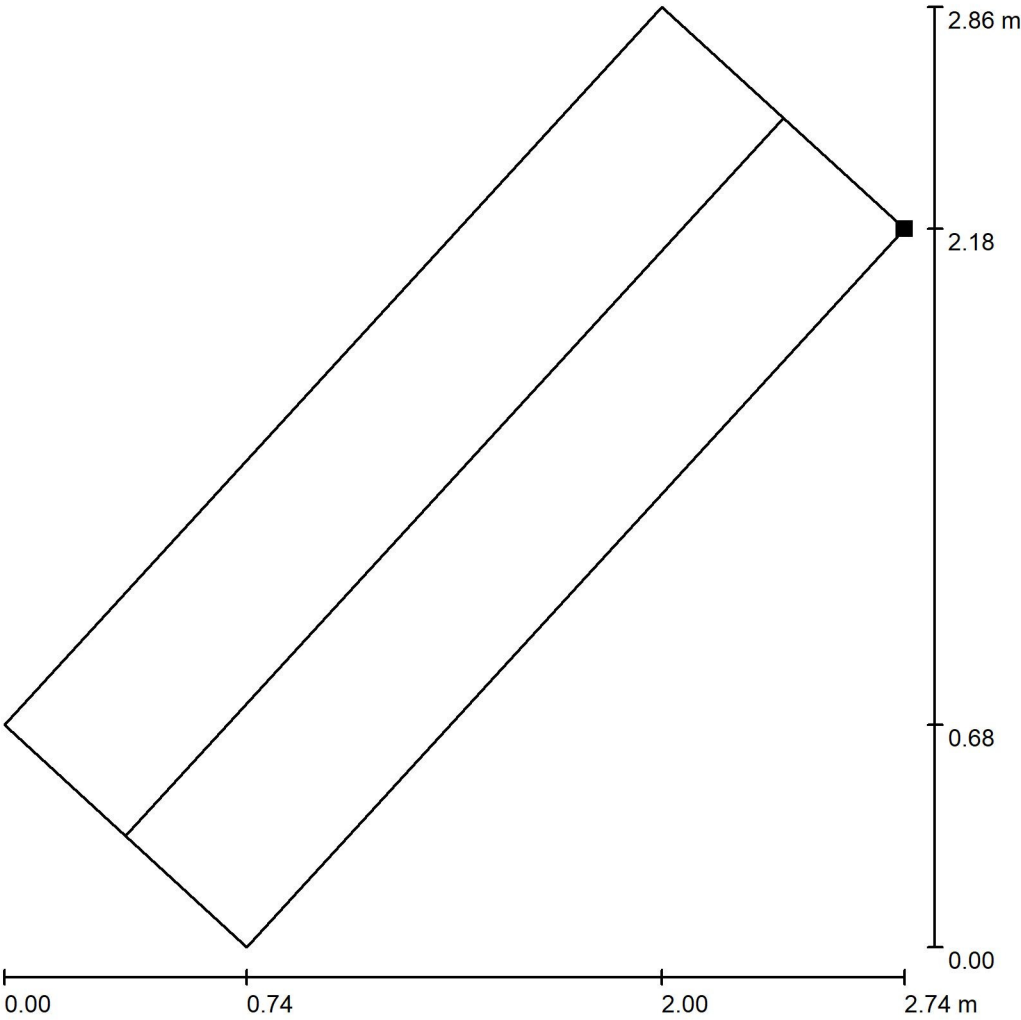
Operator

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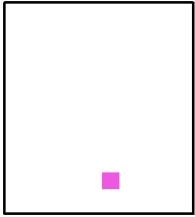
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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W2S FRONT EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-27.522 m, 82.567 m, 0.000 m)



Values in Lux, Scale 1 : 23

Grid: 128 x 32 Points

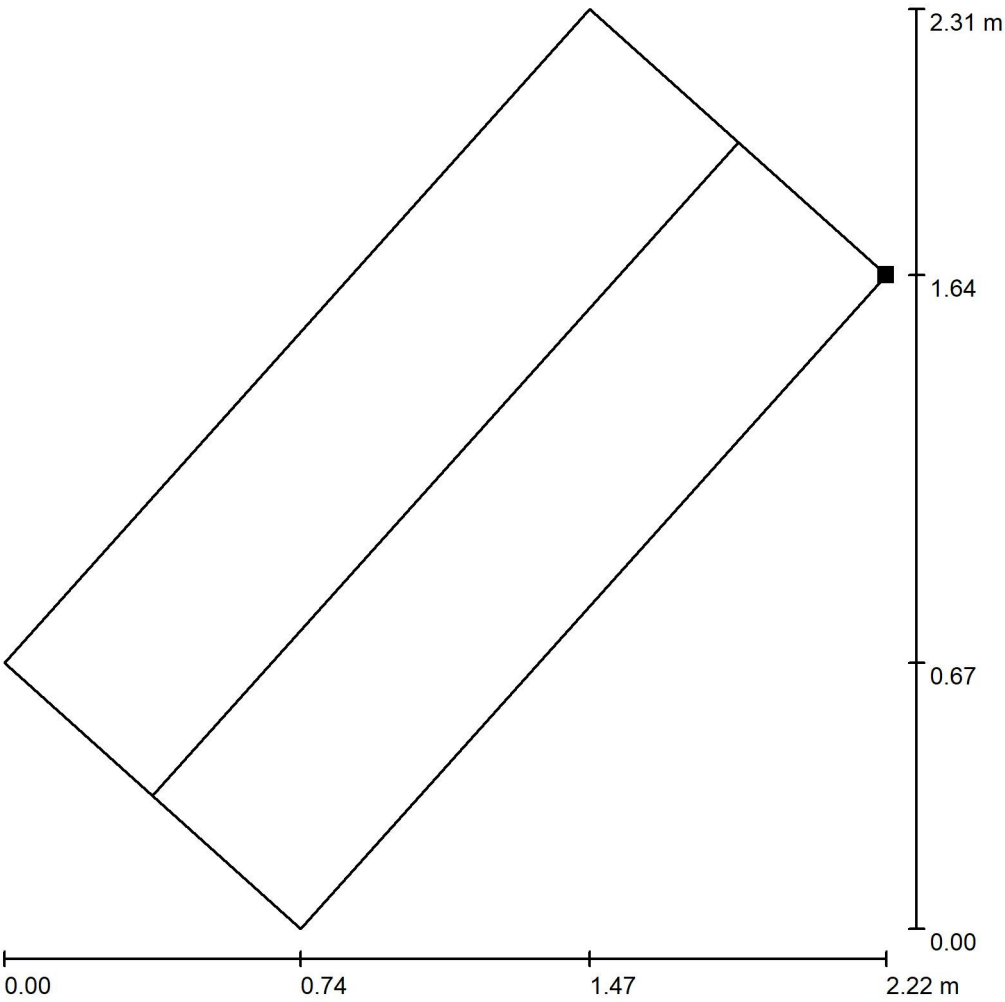
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 3.69          | 3.36           | 3.86           | 0.911 | 0.870               |

Centre line:  $E_{min}$ : 3.36 lx,  $E_{min} / E_{max}$ : 0.87 (1 : 1.15).

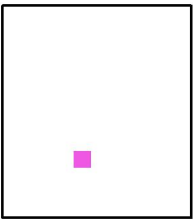


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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W2N FRONT EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-43.604 m, 97.914 m, 0.000 m)



Values in Lux, Scale 1 : 19

Grid: 8 x 4 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 3.80          | 3.08           | 4.56           | 0.810 | 0.676               |

Centre line:  $E_{min}$ : 3.22 lx,  $E_{min} / E_{max}$ : 0.85 (1 : 1.17).

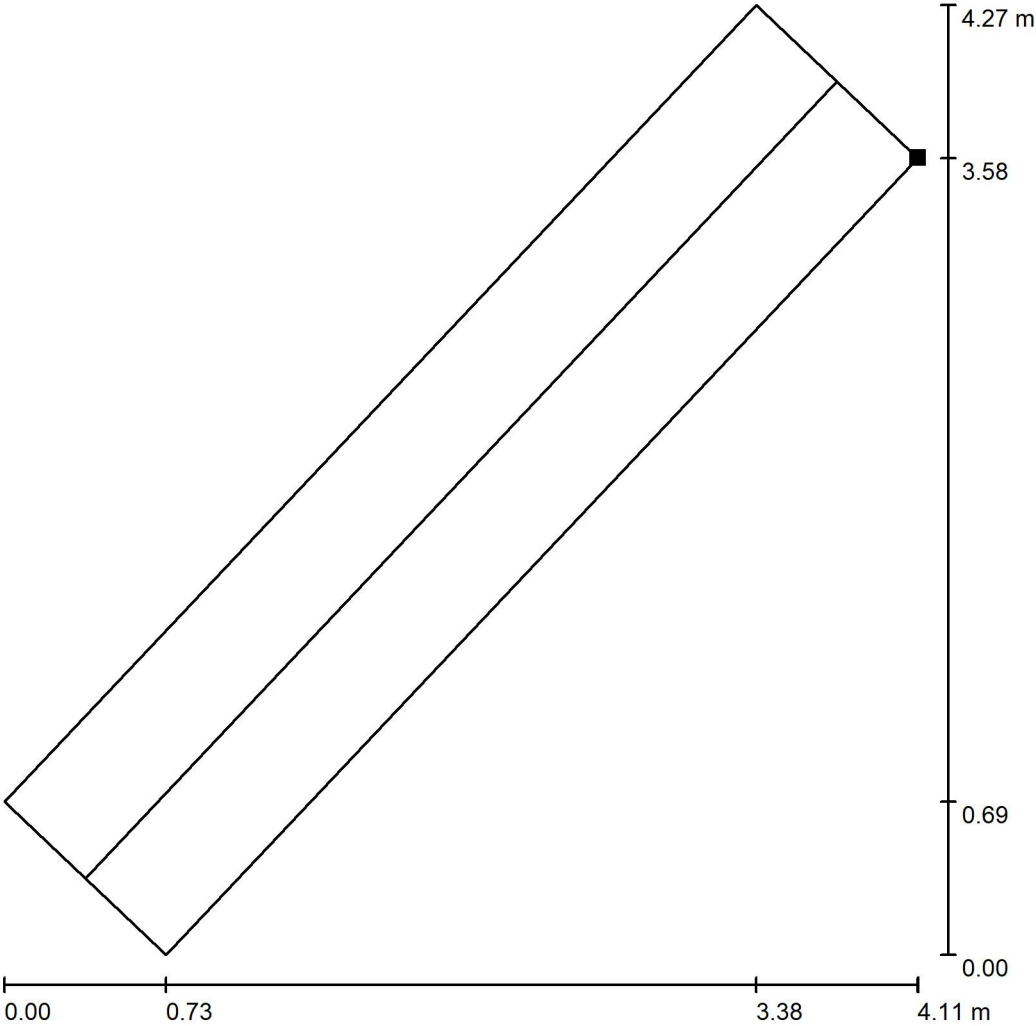
Operator

Telephone

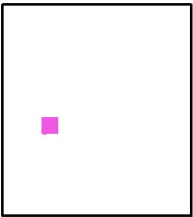
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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W1E FRONT EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-63.441 m, 117.548 m, 0.000 m)



Values in Lux, Scale 1 : 34

Grid: 8 x 2 Points

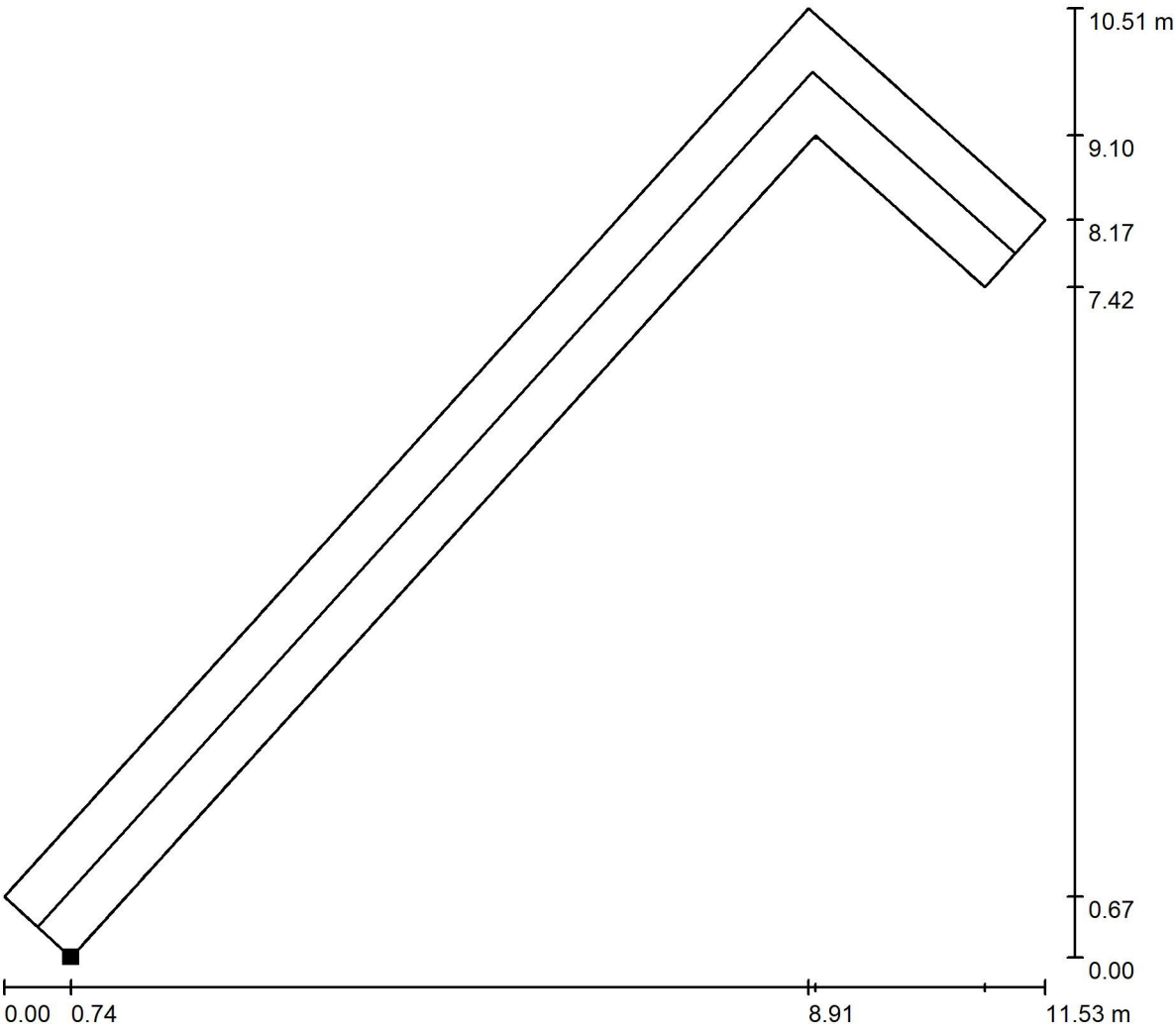
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 3.40          | 2.70           | 3.81           | 0.795 | 0.708               |

Centre line:  $E_{min}$ : 2.70 lx,  $E_{min} / E_{max}$ : 0.71 (1 : 1.41).

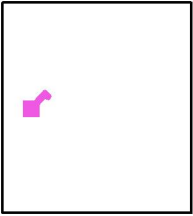


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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W1W FRONT EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-74.959 m, 126.319 m, 0.000 m)



Values in Lux, Scale 1 : 83

Grid: 128 x 32 Points

| $E_{av}$ [lx]                                                            | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|--------------------------------------------------------------------------|----------------|----------------|-------|---------------------|
| 6.63                                                                     | 1.39           | 17             | 0.209 | 0.081               |
| Centre line: $E_{min}$ : 1.74 lx, $E_{min} / E_{max}$ : 0.12 (1 : 8.19). |                |                |       |                     |

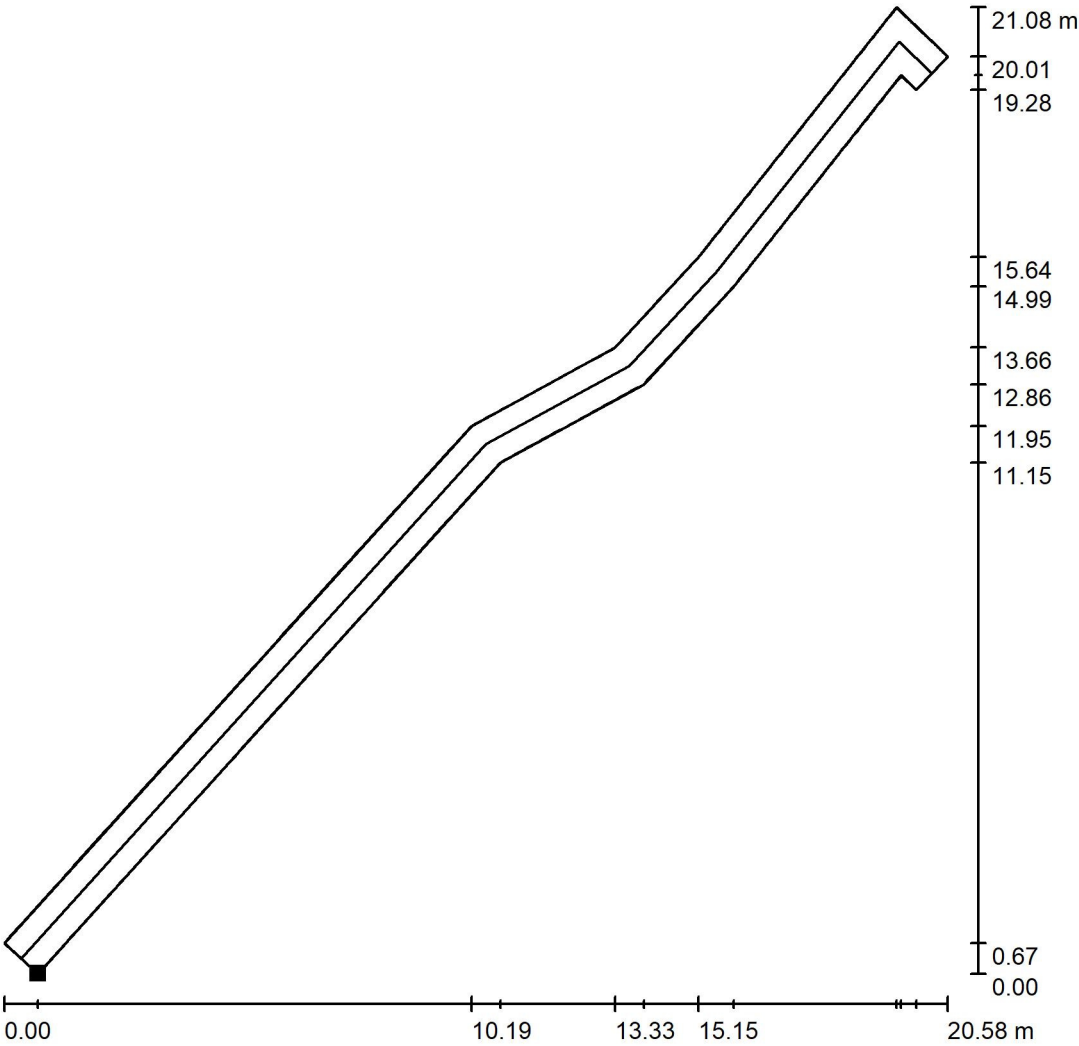
Operator

Telephone

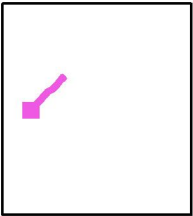
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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W1E BACK CAR PARK EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-74.985 m, 126.293 m, 0.000 m)



Values in Lux, Scale 1 : 165

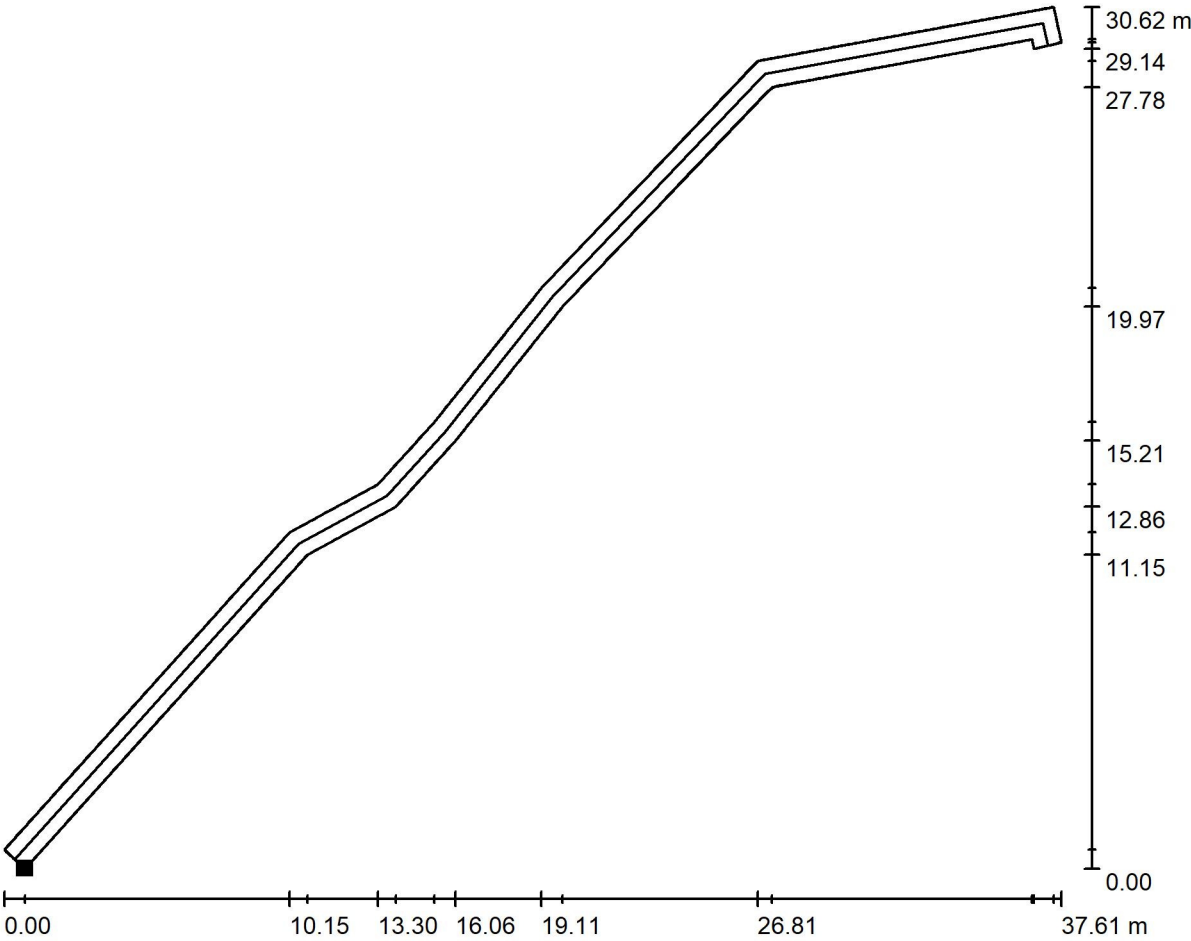
Grid: 128 x 32 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 7.07          | 1.55           | 15             | 0.219 | 0.104               |

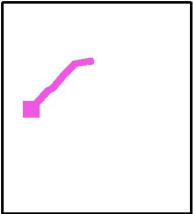
Centre line:  $E_{min}$ : 2.26 lx,  $E_{min} / E_{max}$ : 0.18 (1 : 5.70).

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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W1E CAR PARK EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-74.949 m, 126.288 m, 0.000 m)



Values in Lux, Scale 1 : 269

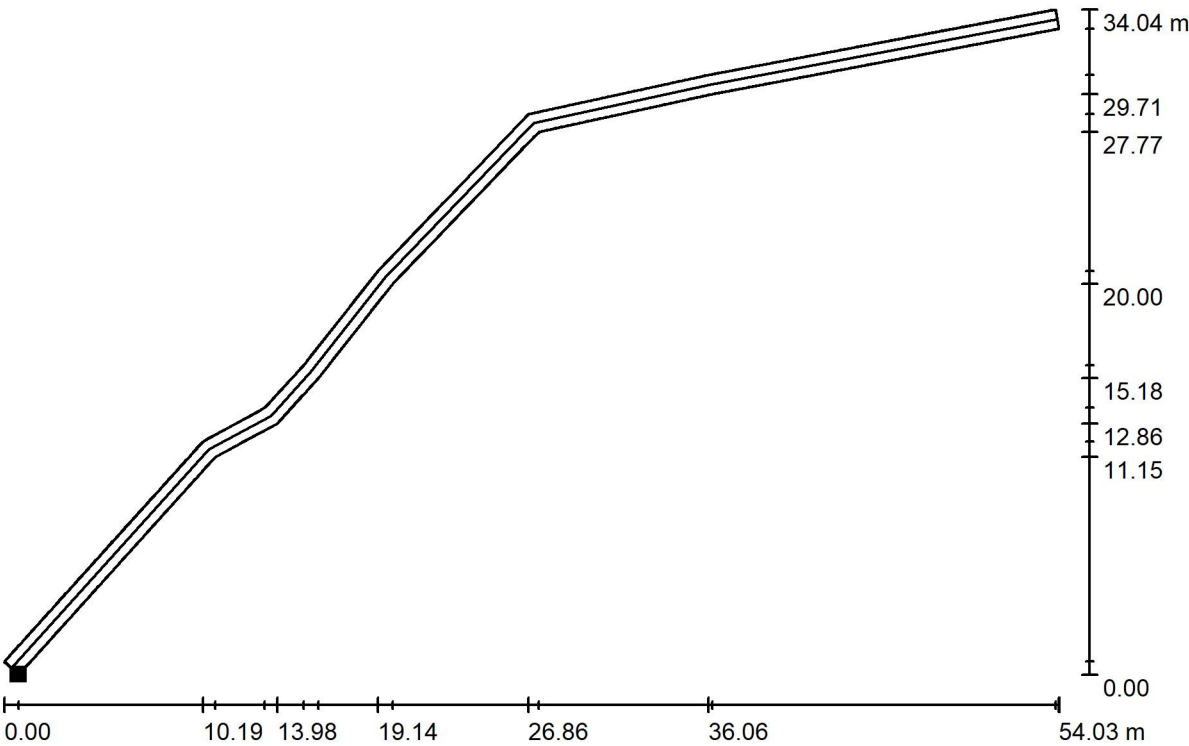
Grid: 128 x 64 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 7.28          | 1.36           | 20             | 0.187 | 0.068               |

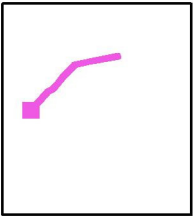
Centre line:  $E_{min}$ : 1.36 lx,  $E_{min} / E_{max}$ : 0.08 (1 : 13).

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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W1E BACK EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(-75.000 m, 126.301 m, 0.000 m)



Values in Lux, Scale 1 : 387

Grid: 128 x 128 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 7.44          | 1.27           | 21             | 0.171 | 0.062               |

Centre line:  $E_{min}$ : 2.09 lx,  $E_{min} / E_{max}$ : 0.10 (1 : 9.82).

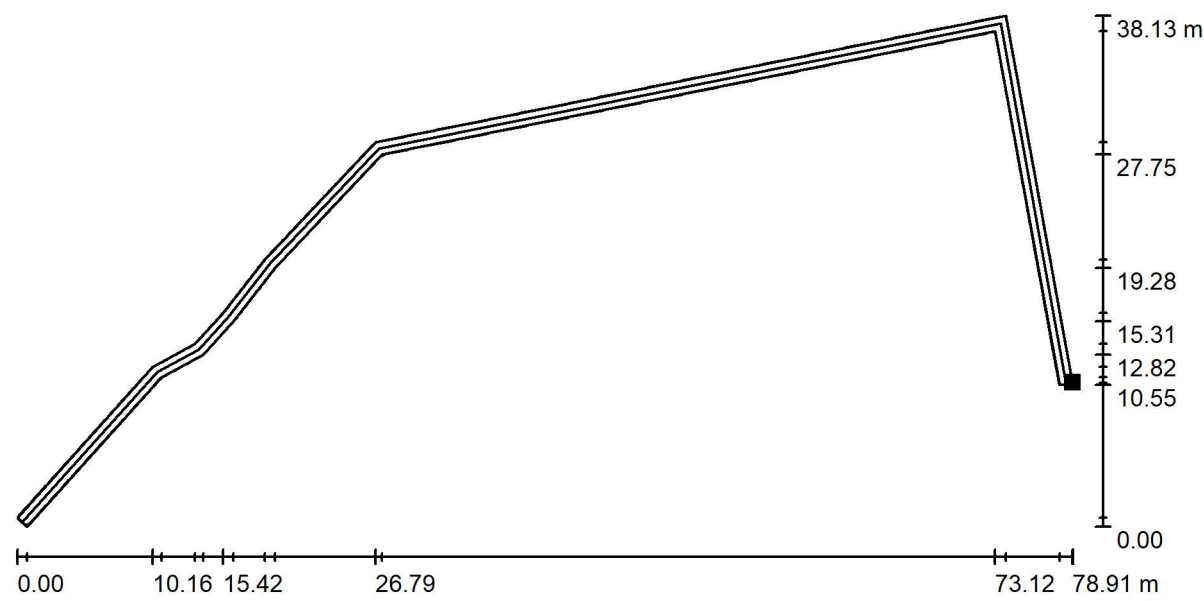
Operator

Telephone

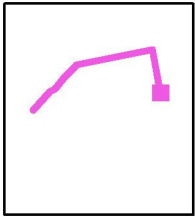
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EMERGENCY LIGHTING CALCULATION / EMERGENCY / W3 REAR EXIT PATH / Isolines (E)



Position of surface in room:  
Marked point:  
(3.220 m, 137.059 m, 0.000 m)



Values in Lux, Scale 1 : 565

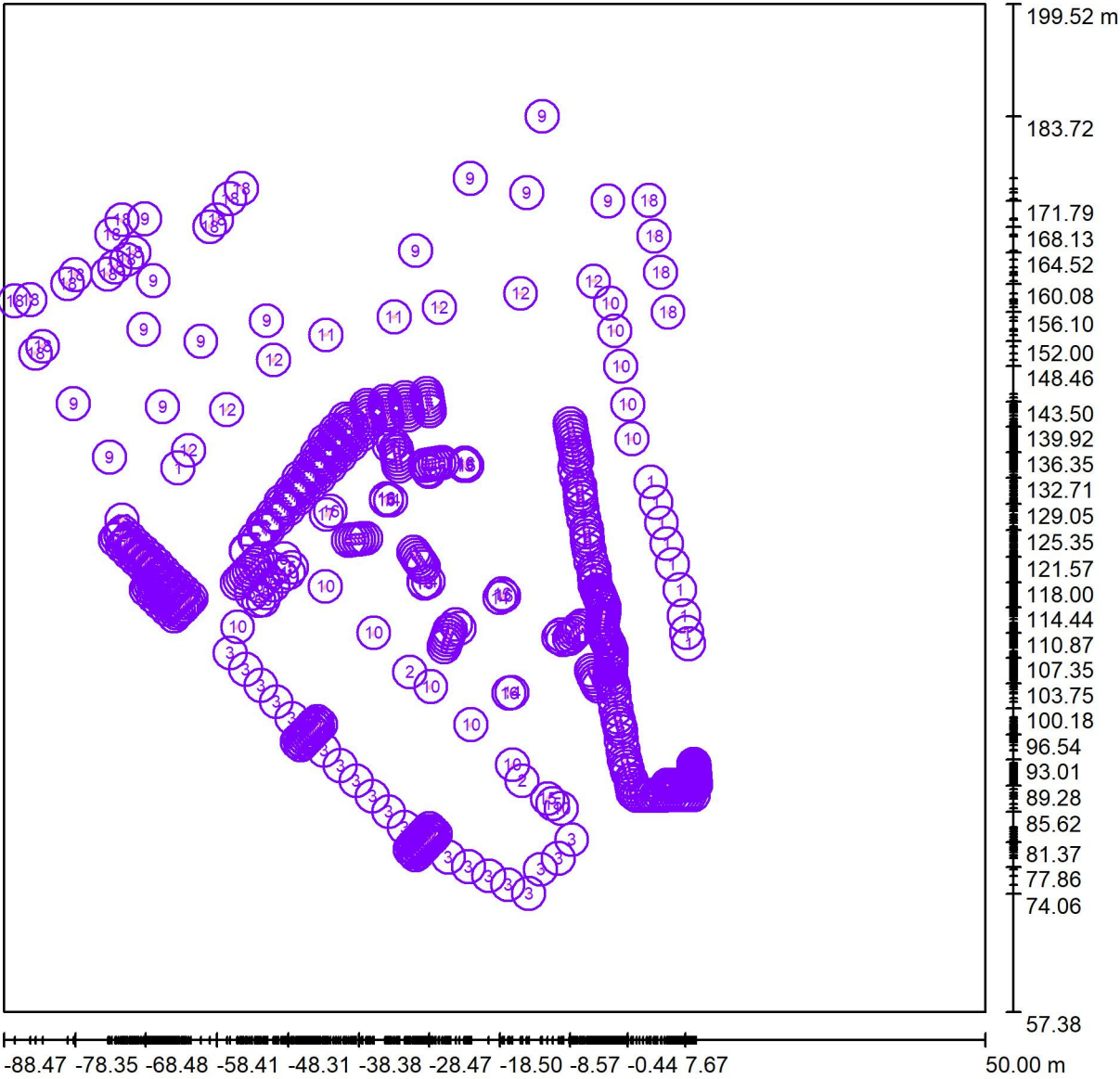
Grid: 128 x 128 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 7.65          | 1.39           | 21             | 0.182 | 0.068               |

Centre line:  $E_{min}$ : 2.15 lx,  $E_{min} / E_{max}$ : 0.11 (1 : 9.51).

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REGULAR LIGHTING CALCULATION / Luminaires (layout plan)



Scale 1 : 990

Luminaire Parts List

| No. | Pieces | Designation                                               |
|-----|--------|-----------------------------------------------------------|
| 1   | 20     | ERCO GmbH 80178000_V02 Quintessence Directional luminaire |
| 2   | 2      | ERCO GmbH 80182000_V02 Quintessence Directional luminaire |
| 3   | 19     | ERCO GmbH 84435000_V05 Compact Downlight oval flood       |
| 4   | 114    | LightGraphix LD43A-C1-500-LW30-MB LD43A-C1                |

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**REGULAR LIGHTING CALCULATION / Luminaires (layout plan)**

**Luminaire Parts List**

| No. | Pieces | Designation                                                                                                           |
|-----|--------|-----------------------------------------------------------------------------------------------------------------------|
| 5   | 10     | LP 45033030-930-30-0 45033030-930-30-0 1050mA LEDStar 3 Spotlight XP-G3 90+CRI 3000K 30°                              |
| 6   | 115    | Lumino Lighting V20S-CDE0505-U1RCB V20S CLEAR ColorCORE® LED Gen II 3000K 500mm 6WM                                   |
| 7   | 188    | Lumino Lighting V36S-CDD0500-U1SCB V36S OPAL ColorCORE® LED Gen II 3000K 500mm 12WM                                   |
| 8   | 9      | Mike Stoane Lighting Clear Cover MSL_Exterior LED Channel_500mm_G3.2 Standard Output Strip_90CRI_1496lm.m_Clear cover |
| 9   | 13     | WE-EF;Eulumdat2 108-1625 PFL230 [P65] IP66:LED-12/24W/3K;PFL230 LED, Street and Area Lighting                         |
| 10  | 14     | WE-EF;Eulumdat2 108-1660 PIA230 [S65] IP66:LED-12/24W/3K;PIA230 LED, Wall Luminaires / Surface Mounted                |
| 11  | 2      | WE-EF;Eulumdat2 108-1666 PIA230 [A60] IP66:LED-12/24W/3K;PIA230 LED, Wall Luminaires / Surface Mounted                |
| 12  | 6      | WE-EF;Eulumdat2 108-1751 PIA230 [A60] IP66:LED-18/36W/3K;PIA230 LED, Wall Luminaires / Surface Mounted                |
| 13  | 1      | WE-EF;Eulumdat2 108-1751 PIA230 [A60] IP66:LED-18/36W/3K;PIA230 LED, Wall Luminaires / Surface Mounted                |
| 14  | 7      | WE-EF;Eulumdat2 108-1783 PFL230 [R65] IP66:LED-18/18W/3K;PFL230 LED, Street and Area Lighting                         |
| 15  | 2      | WE-EF;Eulumdat2 139-1886 FLC230 [FP] IP66:LED-12/52W/3K - max aperture angle;FLC230-GOBO LED-max, Projectors          |
| 16  | 17     | WE-EF;Eulumdat2 139-1909_us FLC230 [W] IP66:LED-12/36W/3K;FLC230 LED, Projectors                                      |
| 17  | 1      | WE-EF;Eulumdat2 147-0689_us FLA730 [A60] IP66:LED-12/24W/3K;FLA730 LED, Area Floodlights                              |
| 18  | 20     | WE-EF;Eulumdat2 185-2446 ETC130-GB [M] VA:IP67:LED-12/18W/3K;ETC130-GB LED, Inground Luminaires                       |

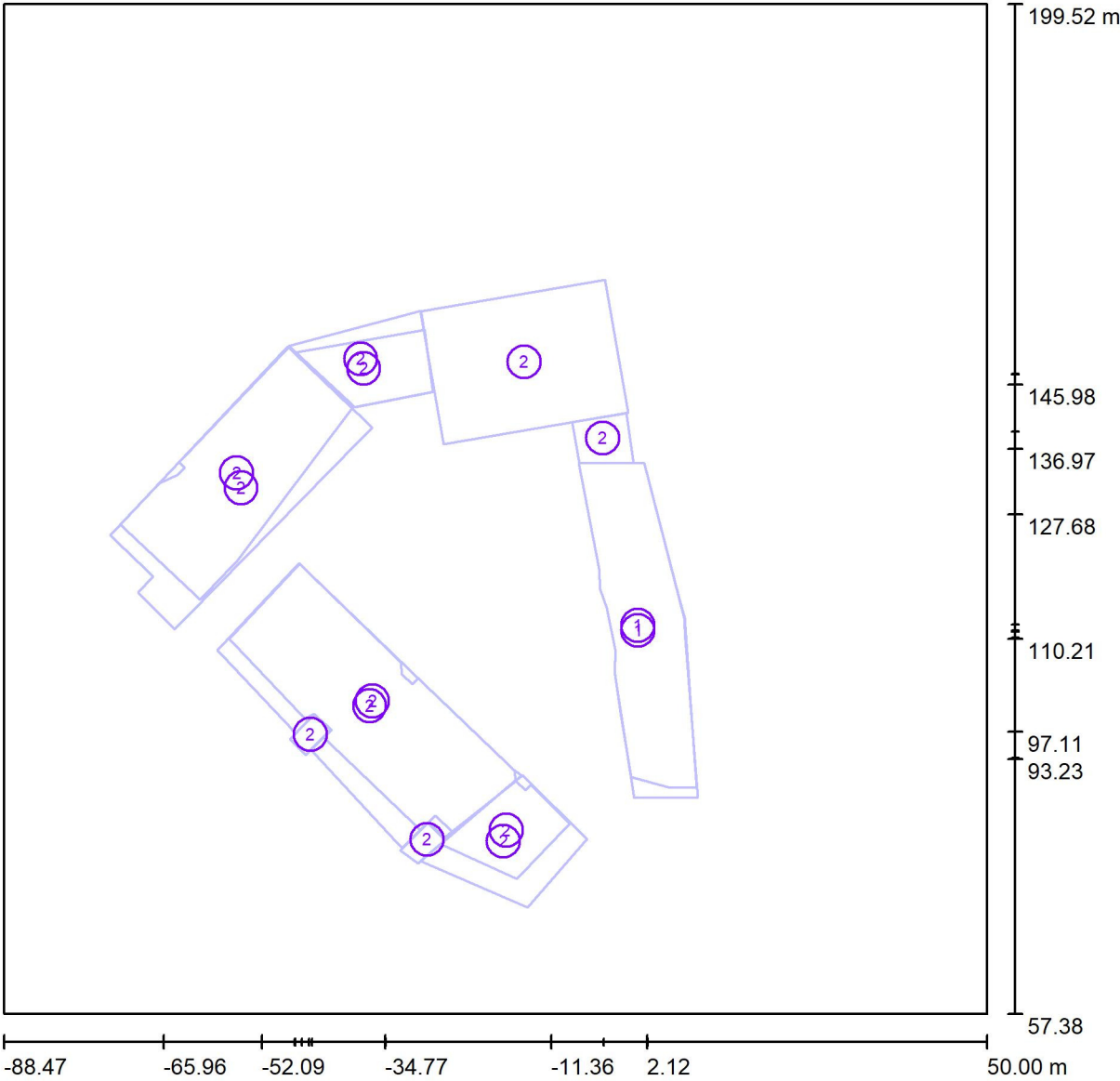
Operator

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REGULAR LIGHTING CALCULATION / Objects (layout plan)



Scale 1 : 990

Object parts list

| No. | Pieces | Designation      |
|-----|--------|------------------|
| 1   | 2      | Block W3         |
| 2   | 12     | Extrusion Volume |

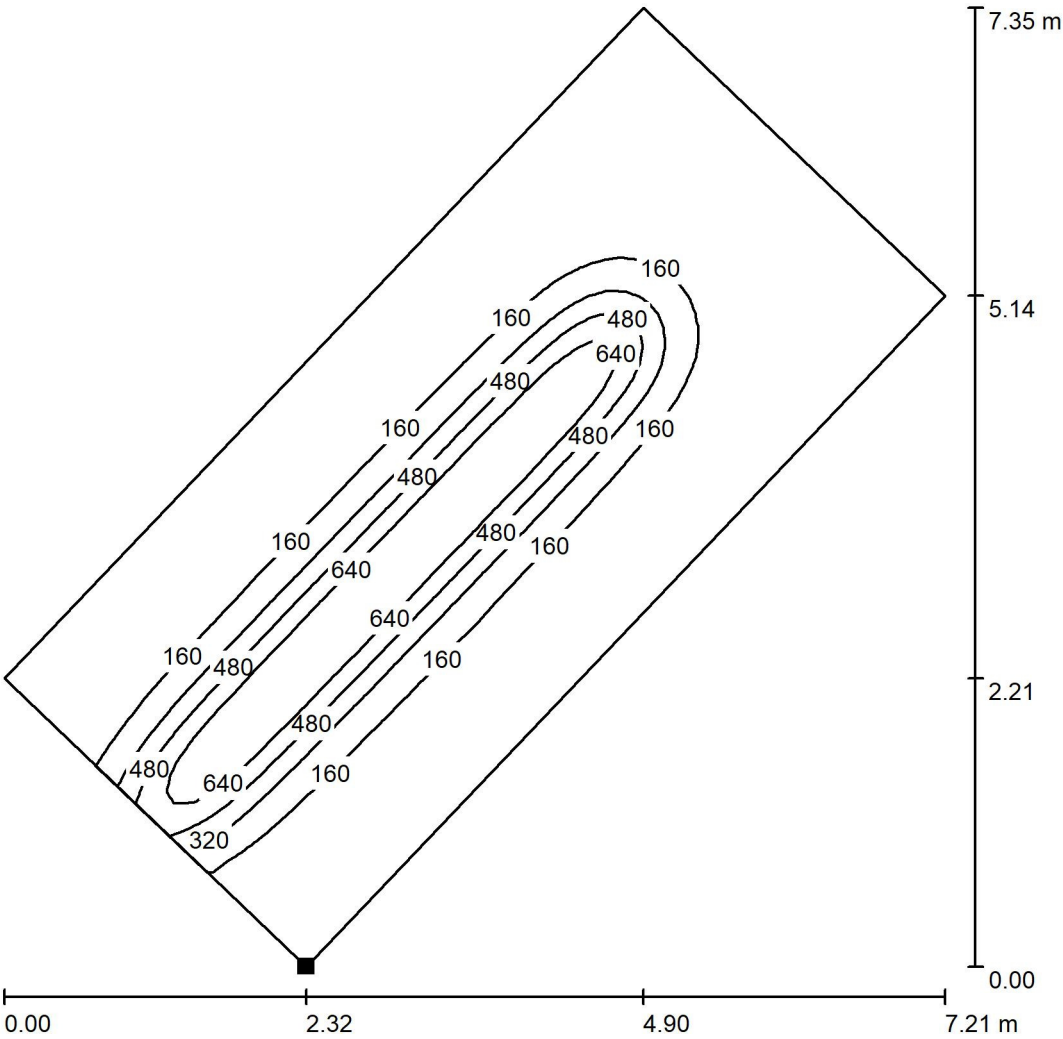
Operator

Telephone

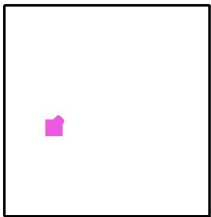
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REGULAR LIGHTING CALCULATION / Podium entrance / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-54.529 m, 116.574 m, 0.000 m)



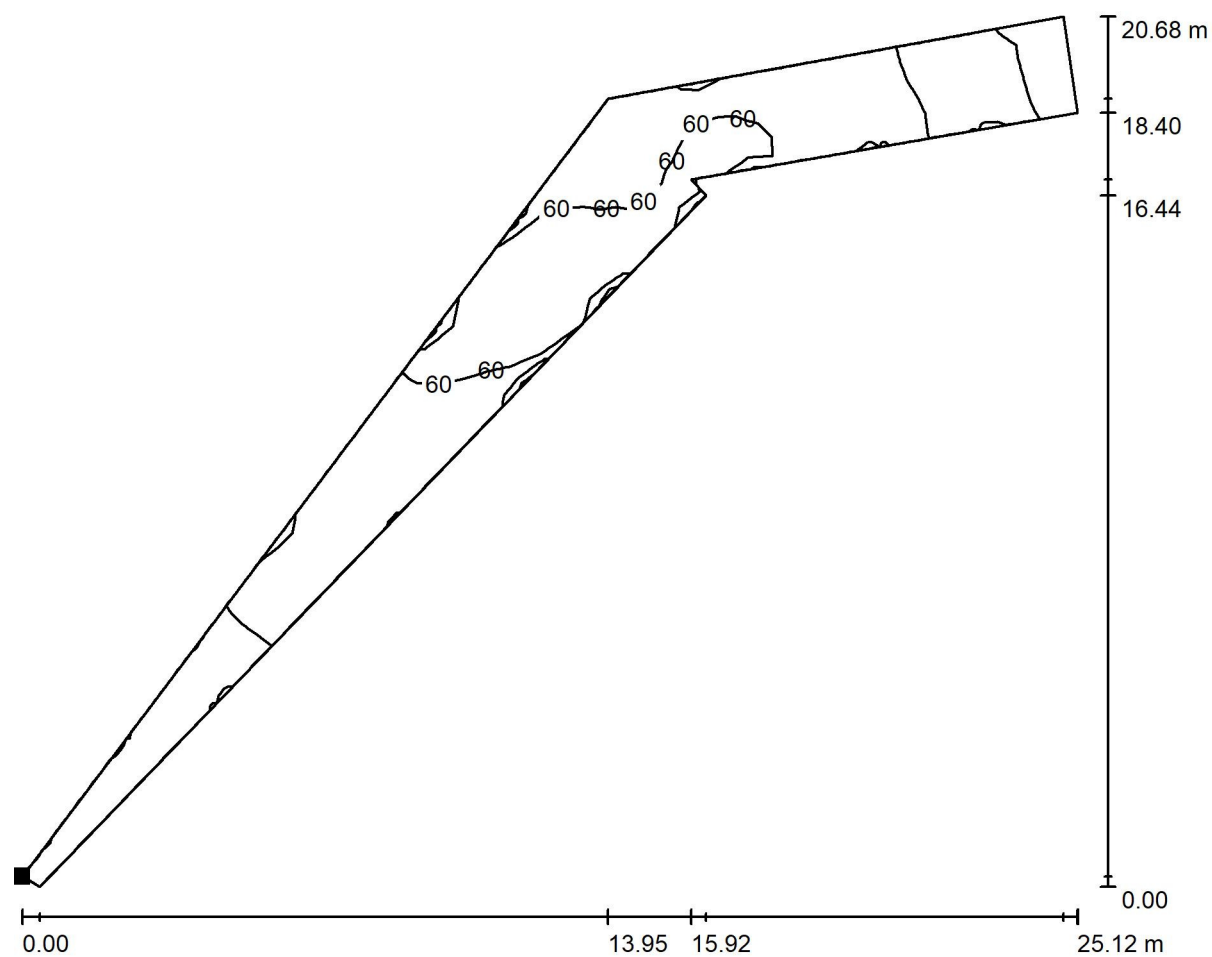
Values in Lux, Scale 1 : 58

Grid: 64 x 32 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 205           | 33             | 825            | 0.161 | 0.040               |

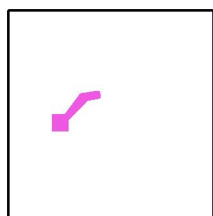
Operator  
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### REGULAR LIGHTING CALCULATION / Block W1 south canopy / Isolines (E, Perpendicular)



Values in Lux, Scale 1 : 180

Position of surface in external scene:  
Marked point:  
(-52.962 m, 123.785 m, 0.000 m)



Grid: 64 x 16 Points

E<sub>av</sub> [lx]  
55

$$E_{\min} [lx]$$

E<sub>max</sub> [Ix]  
66

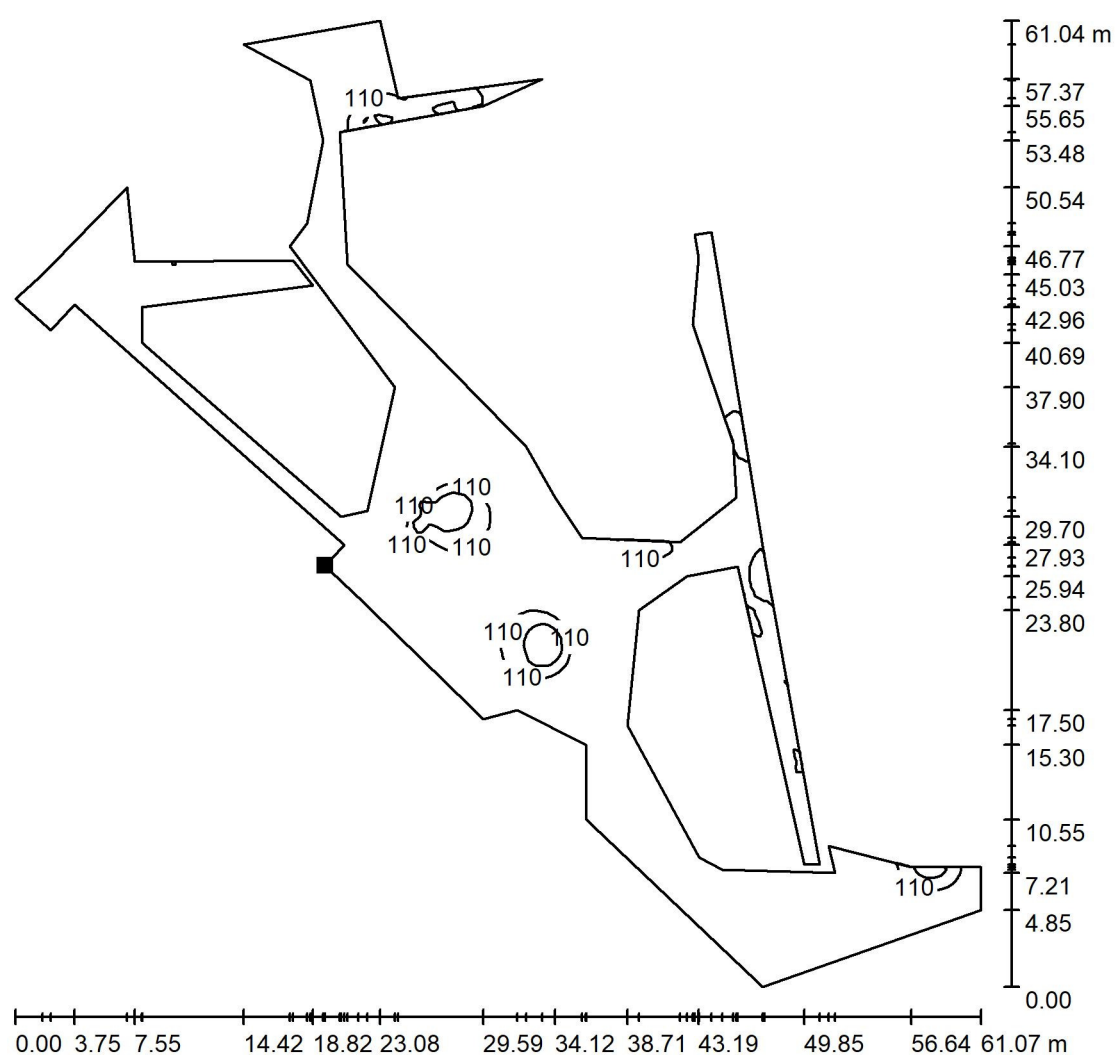
u0  
0.671

$$E_{\min} / E_{\max}$$

0.559

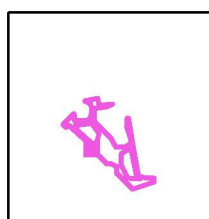
Operator  
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### REGULAR LIGHTING CALCULATION / Podium path way / Isolines (E, Perpendicular)



Values in Lux, Scale 1 : 478

Position of surface in external scene:  
Marked point:  
(-31.774 m, 107.443 m, 0.000 m)



Grid: 128 x 128 Points

E<sub>av</sub> [Ix]  
49

$$E_{\min} [Ix]$$

$$4.98$$
$$E_{\max} [Ix]$$

508

u0  
0.102

$$E_{\min} / E_{\max}$$

0.010

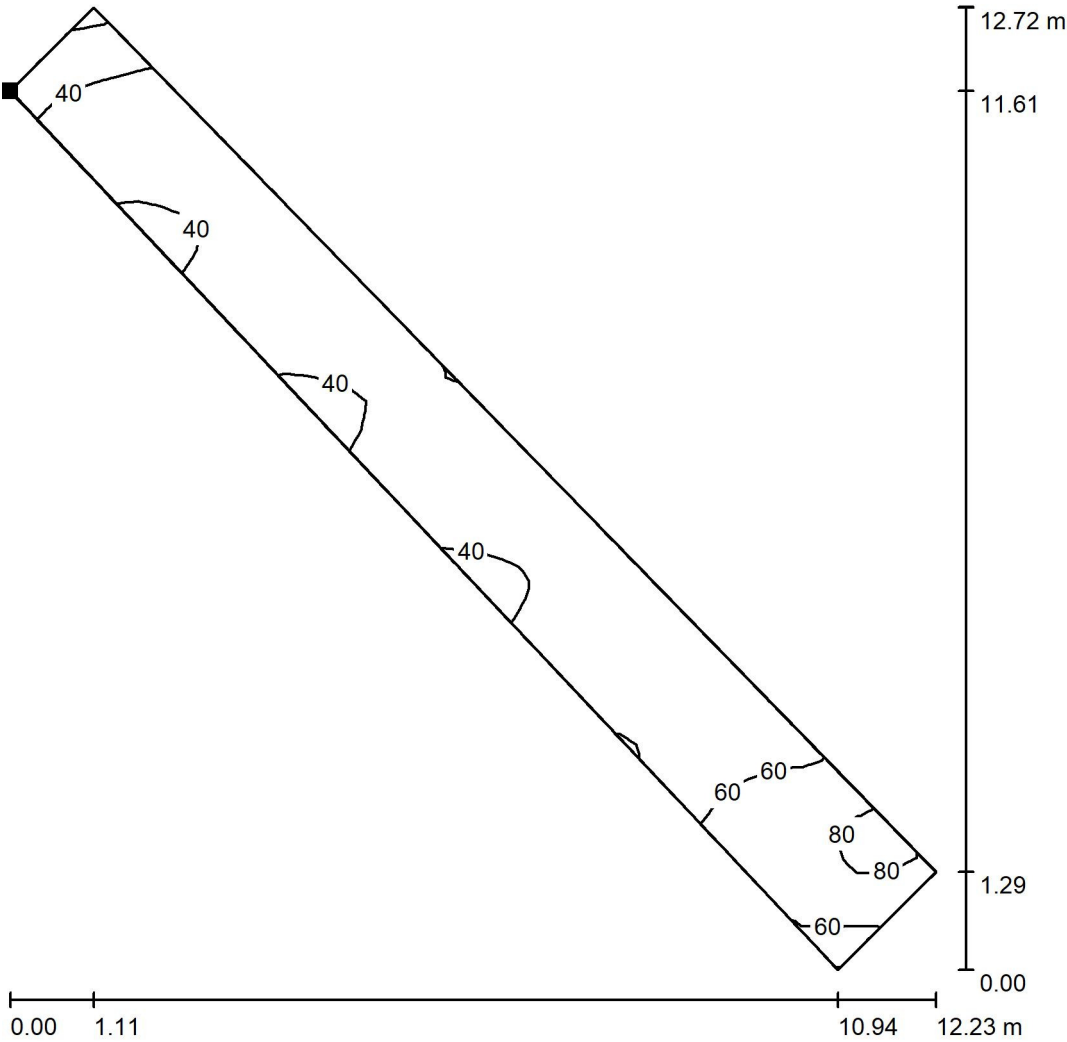
Operator

Telephone

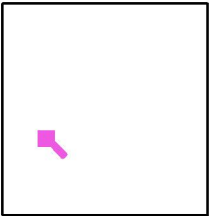
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REGULAR LIGHTING CALCULATION / W2N canopy / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-58.449 m, 108.511 m, 0.000 m)



Values in Lux, Scale 1 : 100

Grid: 64 x 8 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u_0$ | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 52            | 17             | 90             | 0.325 | 0.187               |

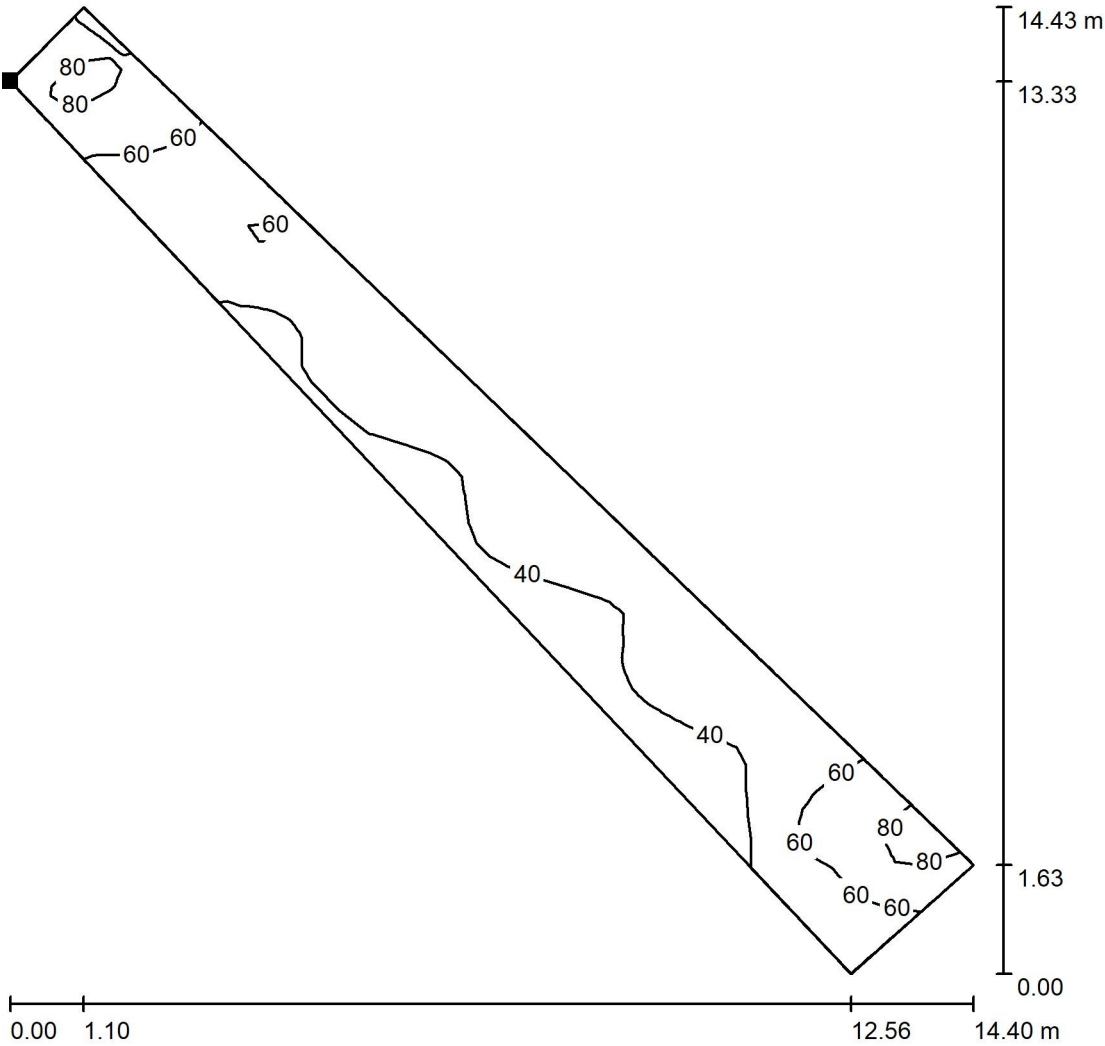
Operator

Telephone

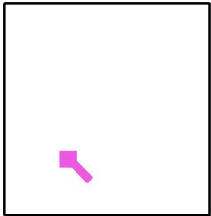
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REGULAR LIGHTING CALCULATION / W2S 01 Canopy / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-44.937 m, 94.470 m, 0.000 m)



Values in Lux, Scale 1 : 113

Grid: 8 x 64 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 51            | 21             | 92             | 0.414 | 0.229               |

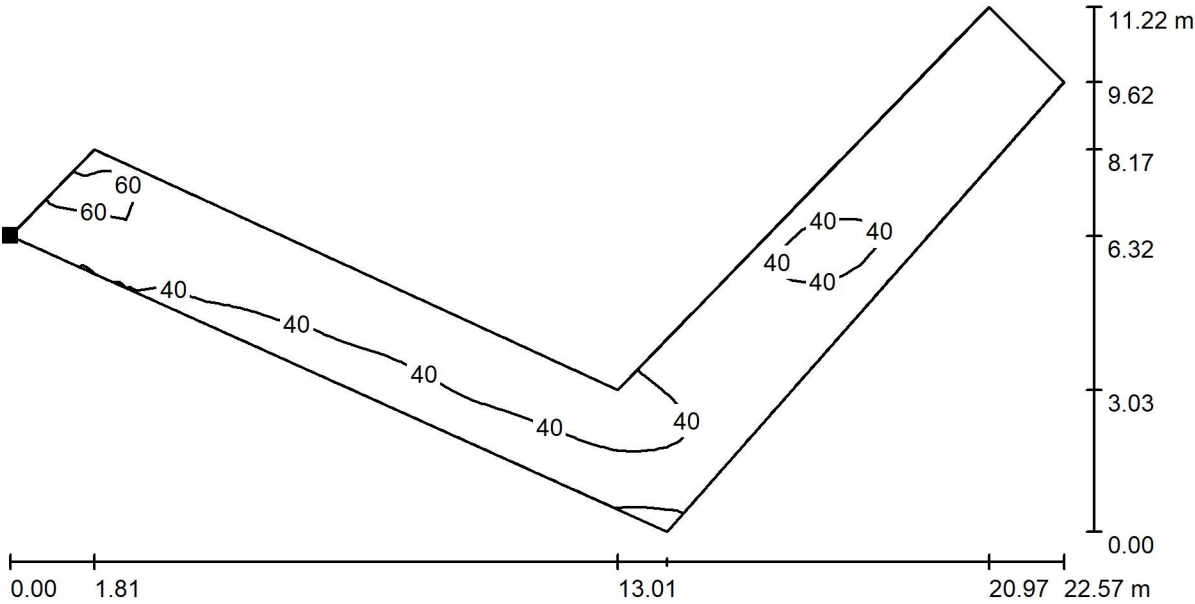
Operator

Telephone

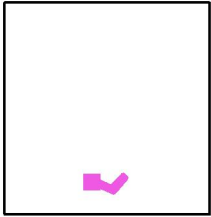
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REGULAR LIGHTING CALCULATION / W2S 02 Canopy / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-28.987 m, 78.599 m, 0.000 m)



Values in Lux, Scale 1 : 162

Grid: 64 x 32 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 39            | 15             | 68             | 0.378 | 0.217               |

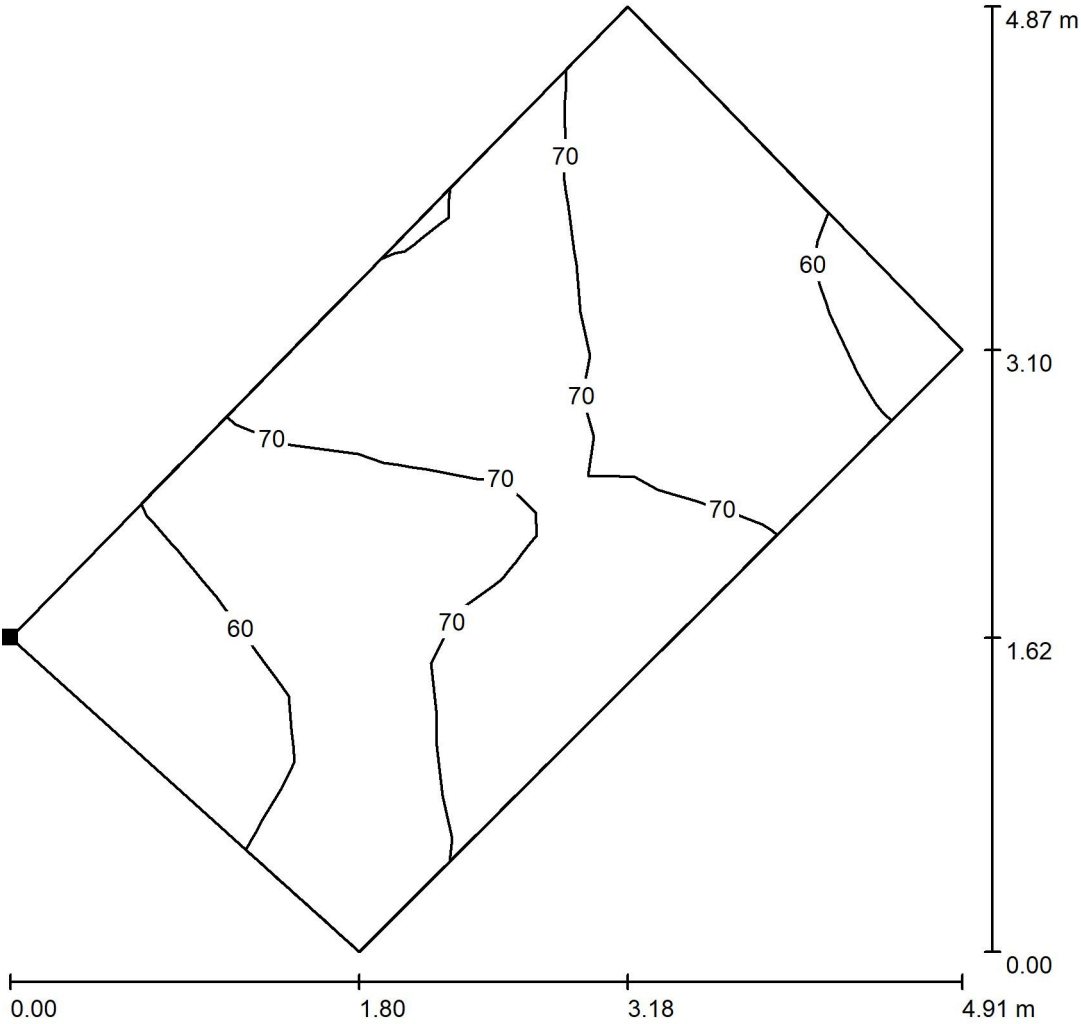
Operator

Telephone

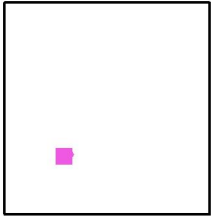
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REGULAR LIGHTING CALCULATION / W2N Entrance / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-47.954 m, 95.830 m, 0.000 m)



Values in Lux, Scale 1 : 39

Grid: 16 x 8 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 67            | 56             | 82             | 0.841 | 0.683               |

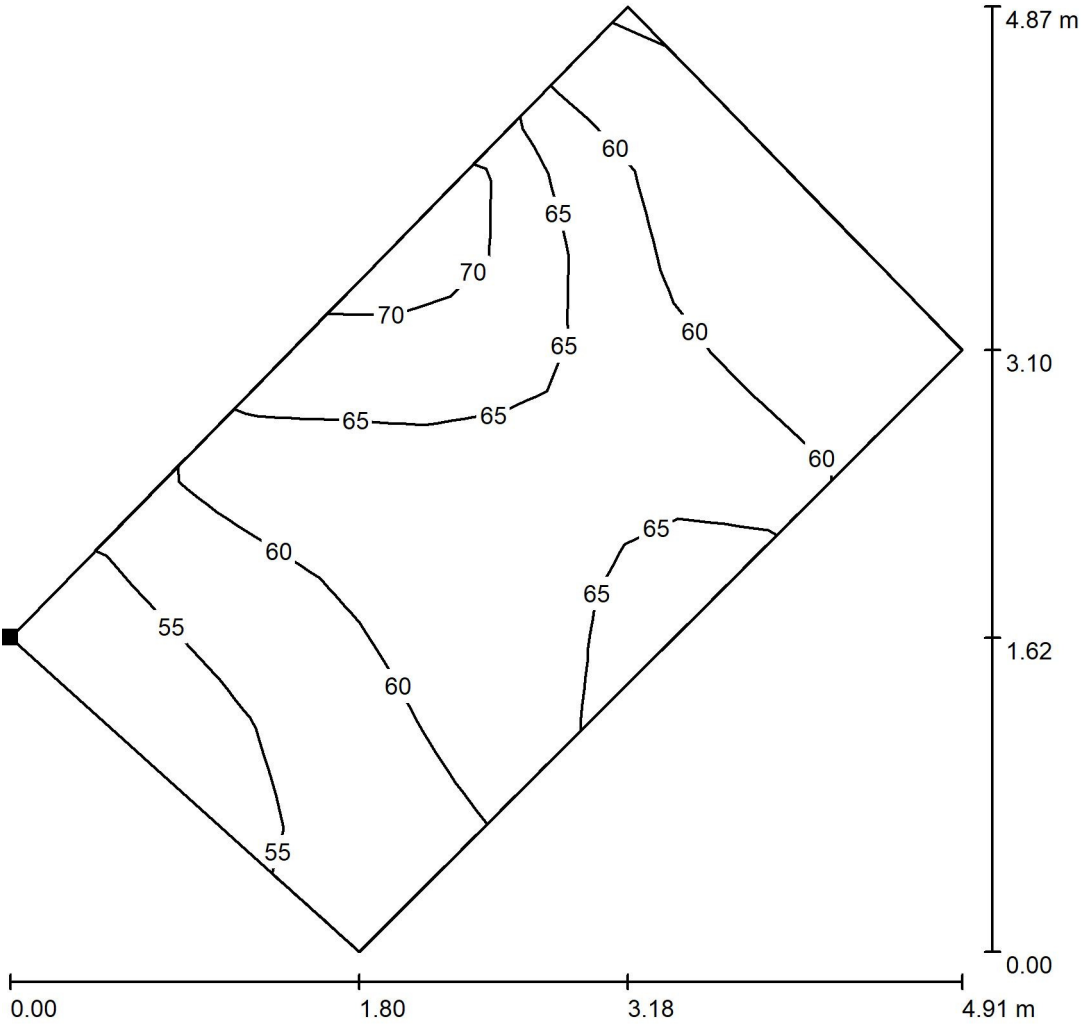
Operator

Telephone

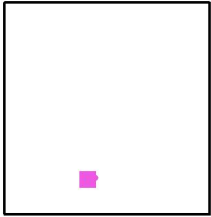
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REGULAR LIGHTING CALCULATION / W2S Entrance / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-31.882 m, 80.475 m, 0.000 m)



Values in Lux, Scale 1 : 39

Grid: 16 x 8 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 61            | 54             | 74             | 0.883 | 0.723               |

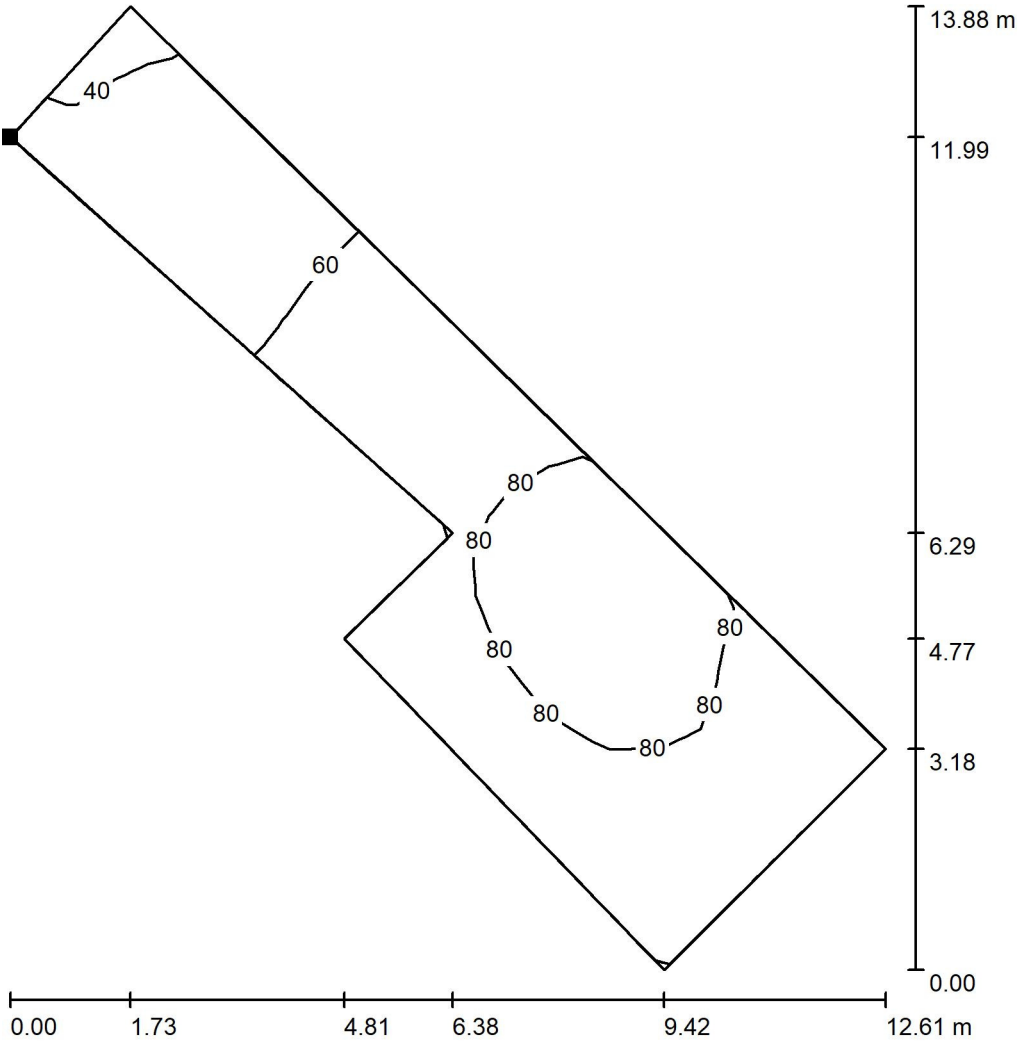
Operator

Telephone

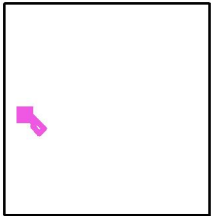
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REGULAR LIGHTING CALCULATION / W1W Main Entrance / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-74.097 m, 124.351 m, 0.000 m)



Values in Lux, Scale 1 : 109

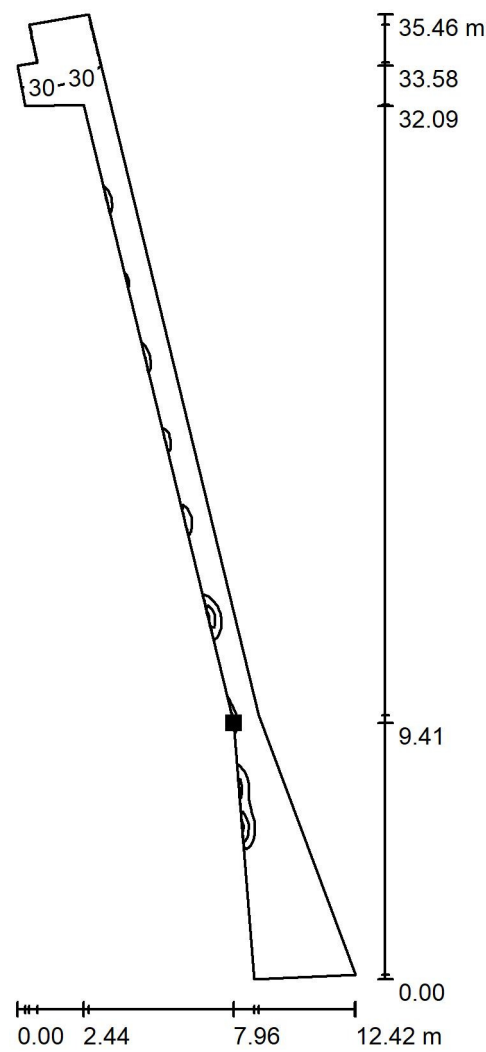
Grid: 8 x 16 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u_0$ | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 69            | 38             | 90             | 0.556 | 0.425               |

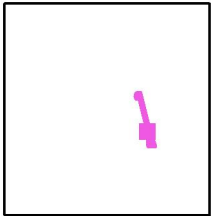


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REGULAR LIGHTING CALCULATION / W3 Rear path way / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(8.399 m, 113.187 m, 0.000 m)



Values in Lux, Scale 1 : 278

Grid: 128 x 32 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 13            | 0.39           | 104            | 0.030 | 0.004               |

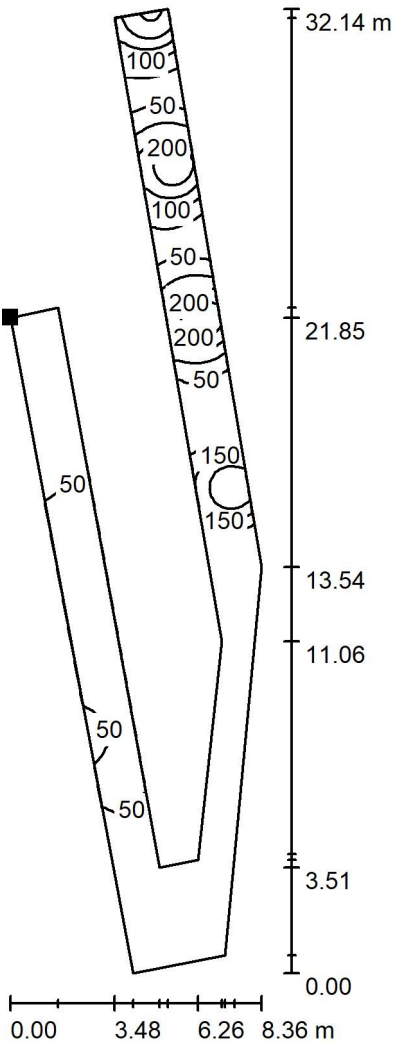
Operator

Telephone

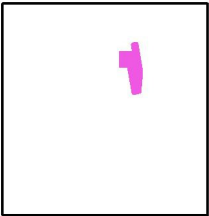
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REGULAR LIGHTING CALCULATION / W1E Rear path way / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-3.441 m, 161.747 m, 0.000 m)



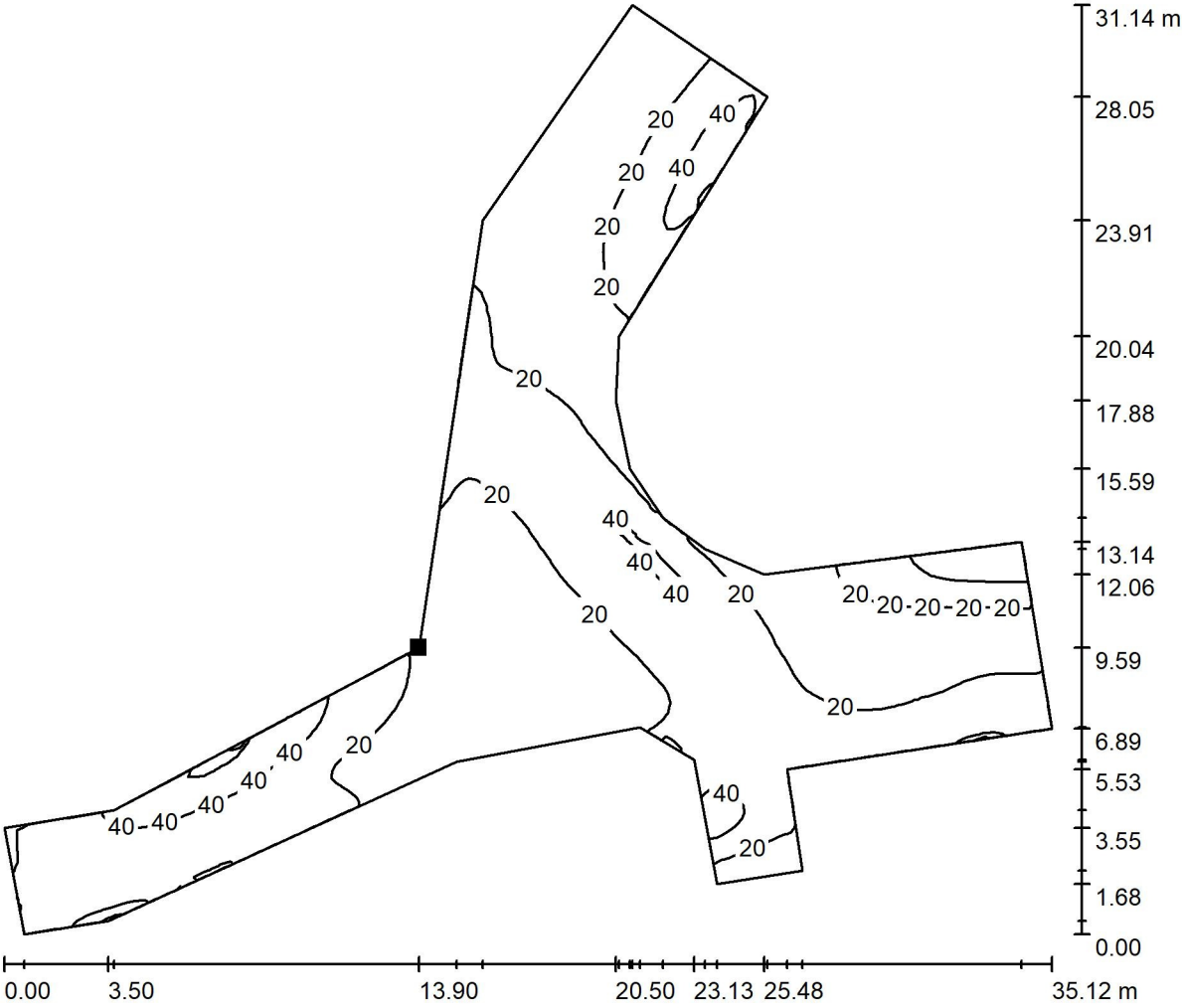
Values in Lux, Scale 1 : 252

Grid: 128 x 64 Points

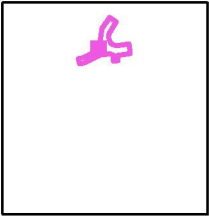
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 71            | 21             | 260            | 0.299 | 0.082               |

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REGULAR LIGHTING CALCULATION / Site Drive way 01 / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-23.297 m, 168.059 m, 0.000 m)



Values in Lux, Scale 1 : 252

Grid: 128 x 128 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u_0$ | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 23            | 2.33           | 63             | 0.103 | 0.037               |

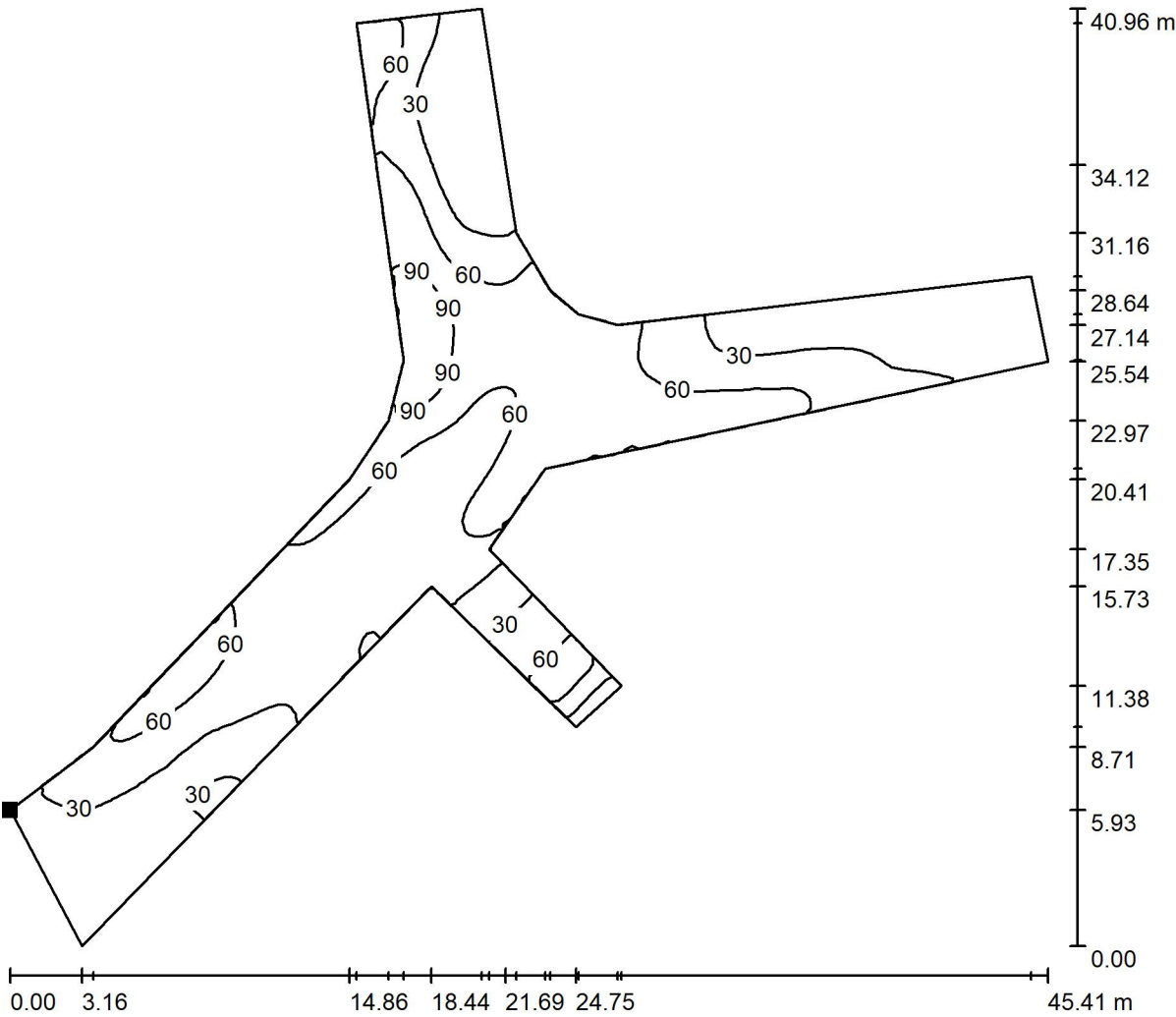
Operator

Telephone

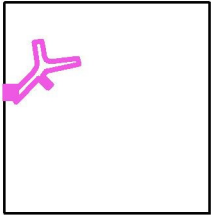
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REGULAR LIGHTING CALCULATION / Site Drive way 02 / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-83.574 m, 138.459 m, 0.000 m)



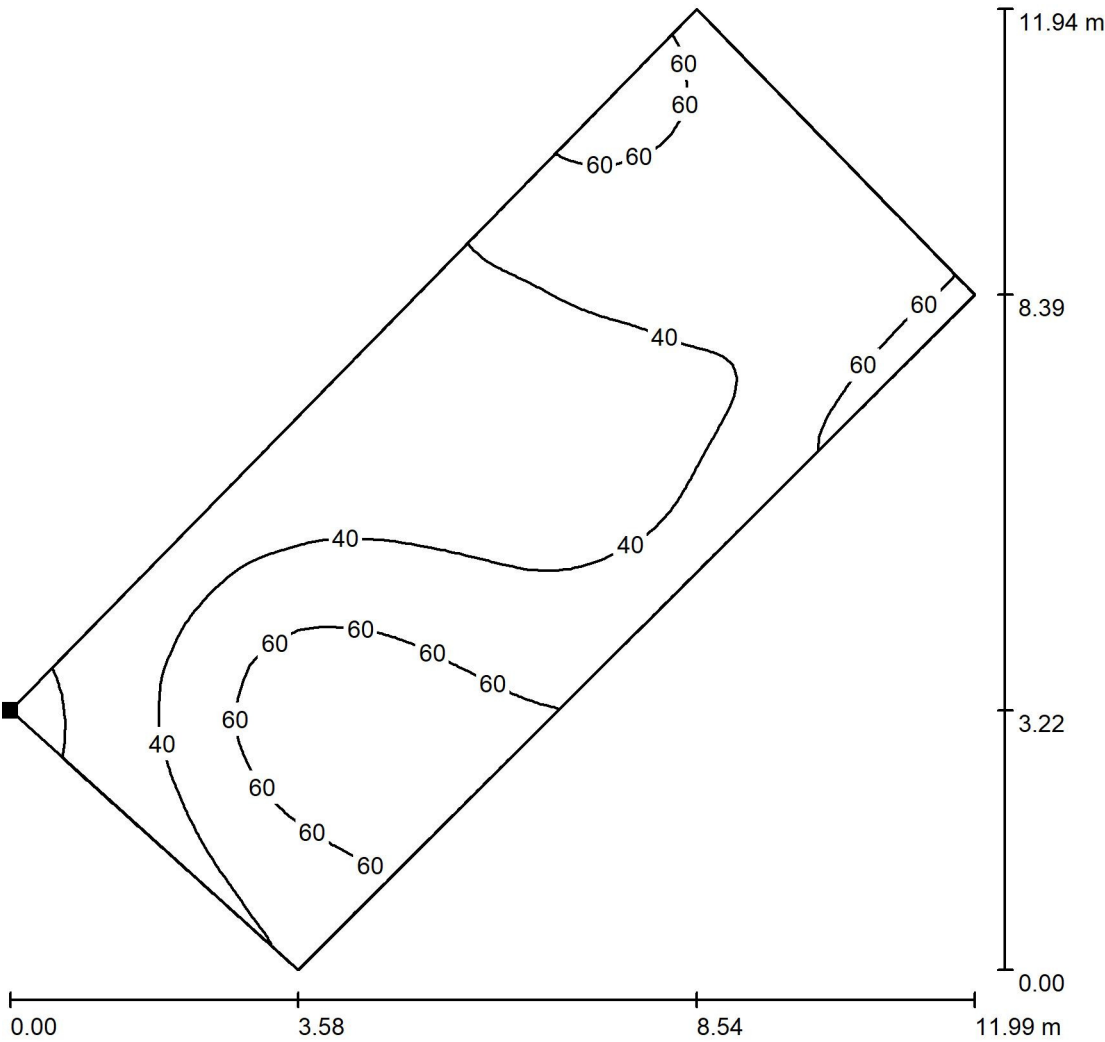
Values in Lux, Scale 1 : 325

Grid: 128 x 128 Points

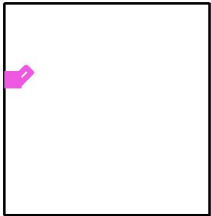
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 46            | 2.48           | 113            | 0.054 | 0.022               |

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REGULAR LIGHTING CALCULATION / Site Parking Way / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-82.135 m, 148.004 m, 0.000 m)



Values in Lux, Scale 1 : 94

Grid: 64 x 32 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 46            | 17             | 72             | 0.363 | 0.230               |

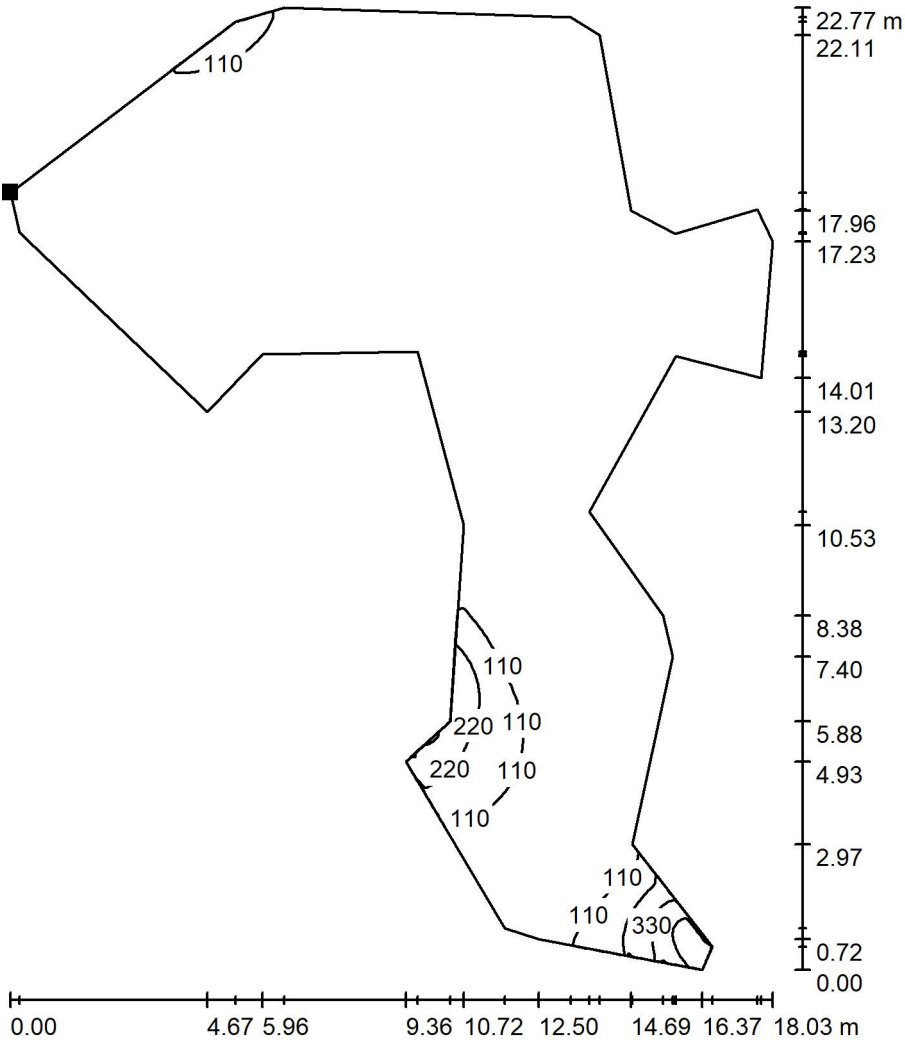
Operator

Telephone

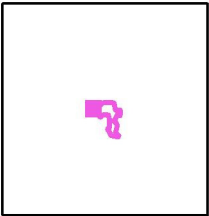
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REGULAR LIGHTING CALCULATION / Podium play area / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(-26.722 m, 128.552 m, 0.000 m)



Values in Lux, Scale 1 : 179

Grid: 128 x 128 Points

| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$  | $E_{min} / E_{max}$ |
|---------------|----------------|----------------|-------|---------------------|
| 31            | 2.64           | 531            | 0.086 | 0.005               |

## 4 - CONCLUSION

The purpose of this study was to attained the following information,

- i. Does the scheme meet the task lighting levels required
- ii. Does the scheme meet emergency lighting levels required

### 7.1 – Task Lighting

When referring to the lighting calculation report it can be seen that the proposed scheme does comply with the relevant specification and regulations.

The external general lighting design responsibility of remains with 18degrees.

### 7.2 – Emergency Lighting

When referring to the cable calculation report it can be seen that the proposed scheme does comply with the minimum 1 Lux lighting level required by BS EN 5266-1:2016 for emergency lighting levels.

## 5 – FURTHER INFORMATION

The document and study was conducted and prepared by ARK Mechanical and Electrical Ltd. Further information can be attained by the following,

ARK Mechanical and Electrical Ltd  
4 Elstree Way,  
Borehamwood,  
Hertfordshire,  
WD6 1RN