

# Horse Menage 60x40m

Installation : Proposed Lighting Design

Project number : LD2271

Customer : BEI Lighting, Bridgend

Processed by : Will Sheard

Date : 07.08.2023

## Project description:

Design based on the information provided and aimed to achieve SLL (CIBSE) LG4 guidelines for External Equestrian Sports Class III for training purposes, requiring 100 lux and 0.5 uniformity. Glare is also to be reduced as much as possible to both the horse and the rider.

Utilising 16No. of Skyline Virtus 300W 4000K Asymmetric Floodlight (Type EX1 blue arrow) mounted atop proposed 10m columns achieves the following results:

Horizontal Illuminance  $\geq 130$  lux with a uniformity of  $\geq 0.60U_0$ .

Upwards light is 0%. Glare is maximum 44.4 (guidelines require max 55 glare for Class III).

We have also shown glare, ULR and day 1 resulting horizontal spillage figures for your consideration and approval.

Full installation, vertical tilt angles and aiming coordinates guidance drawings can be provided on request when an order has been placed.

Aiming coordinates and tilt angles for all floodlights must be confirmed with lighting design department prior to on-site installation day.

Engineer assessment of column capabilities required to understand if it is possible to mount proposed floodlights on the installed columns.

Suitable columns or any additional brackets (if required) are excluded and to be provided by others.

If our proposals are based on Google Maps, photographs or unscaled drawings, results are indicative only and full site survey will be required prior to placing an order.

Please verify usage and target lux levels (specified on results overview page), dimensions, heights and if all areas requiring lighting design are included. Any assumptions made at design stage should be verified prior to ordering and please do not hesitate to contact us if any alterations or additional details required.

Any additional luminaires for the above will be subject to an additional cost.

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

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## Luminaire data

**BELL Lighting Limited, Skyline Virtus 300W 4000K Asy... (!EX1 11491)**

### Data sheet

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**Manufacturer: BELL Lighting Limited**

**!EX1 11491 Skyline Virtus 300W 4000K Asymmetric Floodlight**

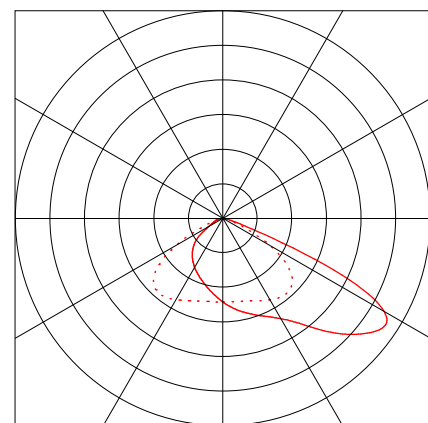
#### Luminaire data

Luminaire efficiency : 100%  
Luminaire efficacy : 153.58 lm/W  
Classification : A40 ↓100.0% ↑0.0%  
CIE Flux Codes : 41 84 99 100 100  
UGR 4H 8H : 39.2 / 33.1  
Power : 300.1 W  
Luminous flux : 46090 lm

#### Equipped with

Quantity : 1  
Designation : LED 840  
Colour : 4000K  
Luminous flux : 46090 lm  
Colour reproduction : 80

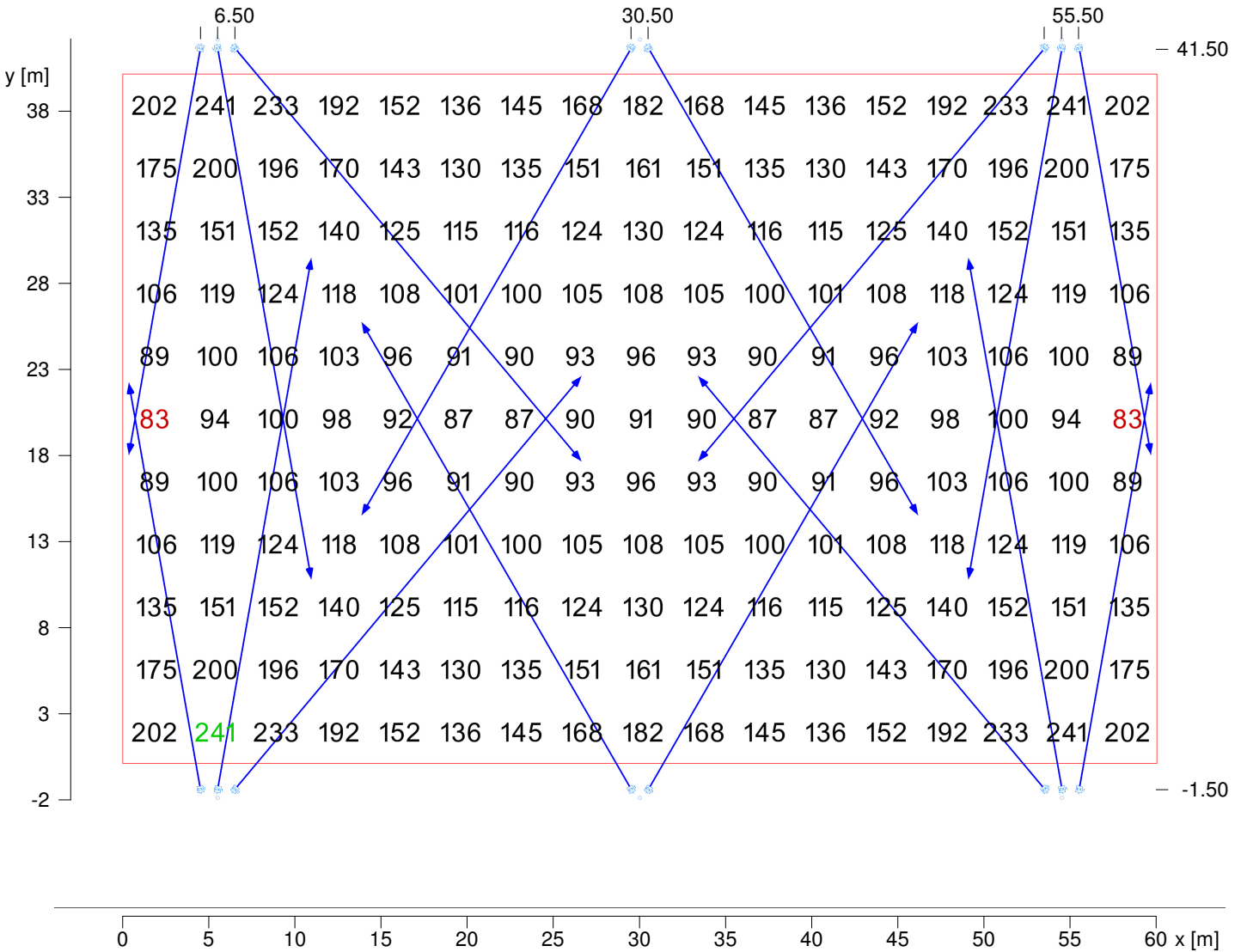
Dimensions : 380 mm x 380 mm x 75 mm



# Equestrian Arena

## Description, Equestrian Arena

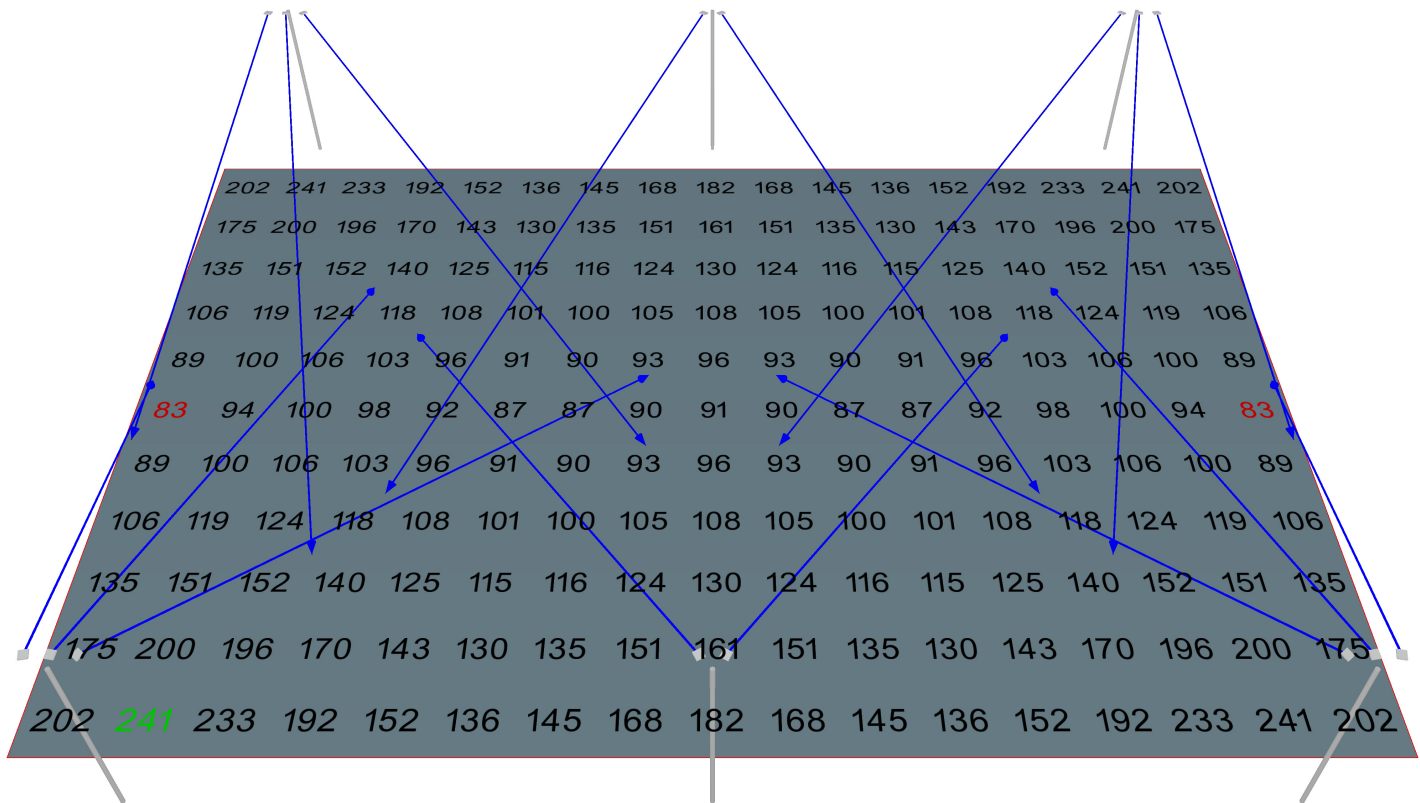
### Floor plan



## Description, Equestrian Arena

### 3D view, Visualisation A

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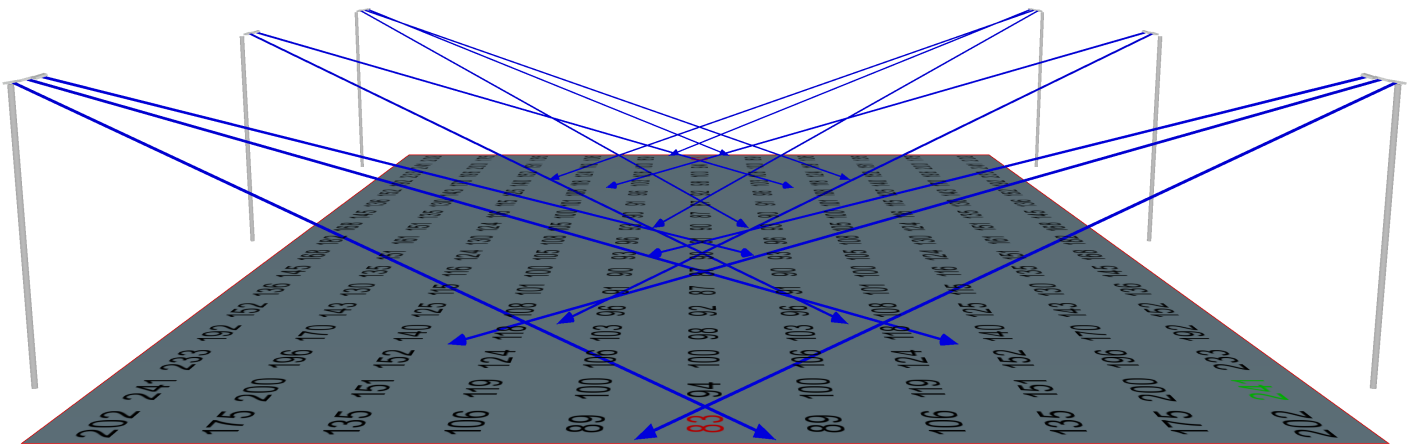


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## Description, Equestrian Arena

### 3D view, Visualisation B



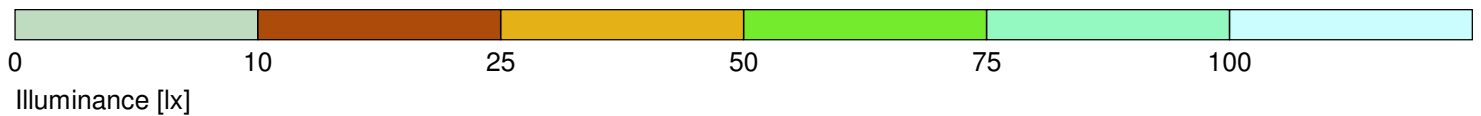
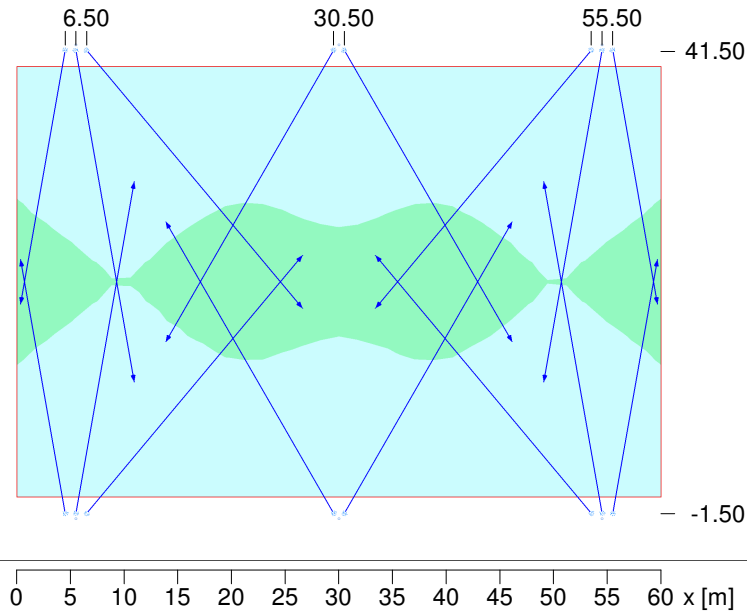
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## Equestrian Arena

### Summary, Equestrian Arena

#### Result overview, Evaluation area 1



#### General

Calculation algorithm used	Average indirect fraction
Height (phot. centre)	10.16 m
Maintenance factor	0.80
Total luminous flux	737440.00 lm
Total power	4801.6 W
Total power per area (2400.00 m <sup>2</sup> )	2.00 W/m <sup>2</sup> (1.51 W/m <sup>2</sup> /100lx)

#### Evaluation area 1

#### Reference plane 1.1

User profile: SLL(CIBSE) LG4 3.18 Equestrian Sports - Lighting Class III (General training, recreational and school sports) (Ra >20.00)	
$\bar{E}_m$	133 lx ( $\geq 100$ lx)
$E_{min}$	83 lx
$E_{min}/\bar{E}_m (U_0)$	0.62 ( $\geq 0.50$ )
$E_{min}/E_{max} (U_d)$	0.34
Upward light ratio (ULR)	0.00
Position	0.00 m

#### RG Table

0.37 cd/m<sup>2</sup>, 170 lx,  $\rho = 0\%$  ( $-2^\circ$ )  
 RG,max 44.4 (h=1.60m)

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## Equestrian Arena

### Summary, Equestrian Arena

#### Result overview, Evaluation area 1

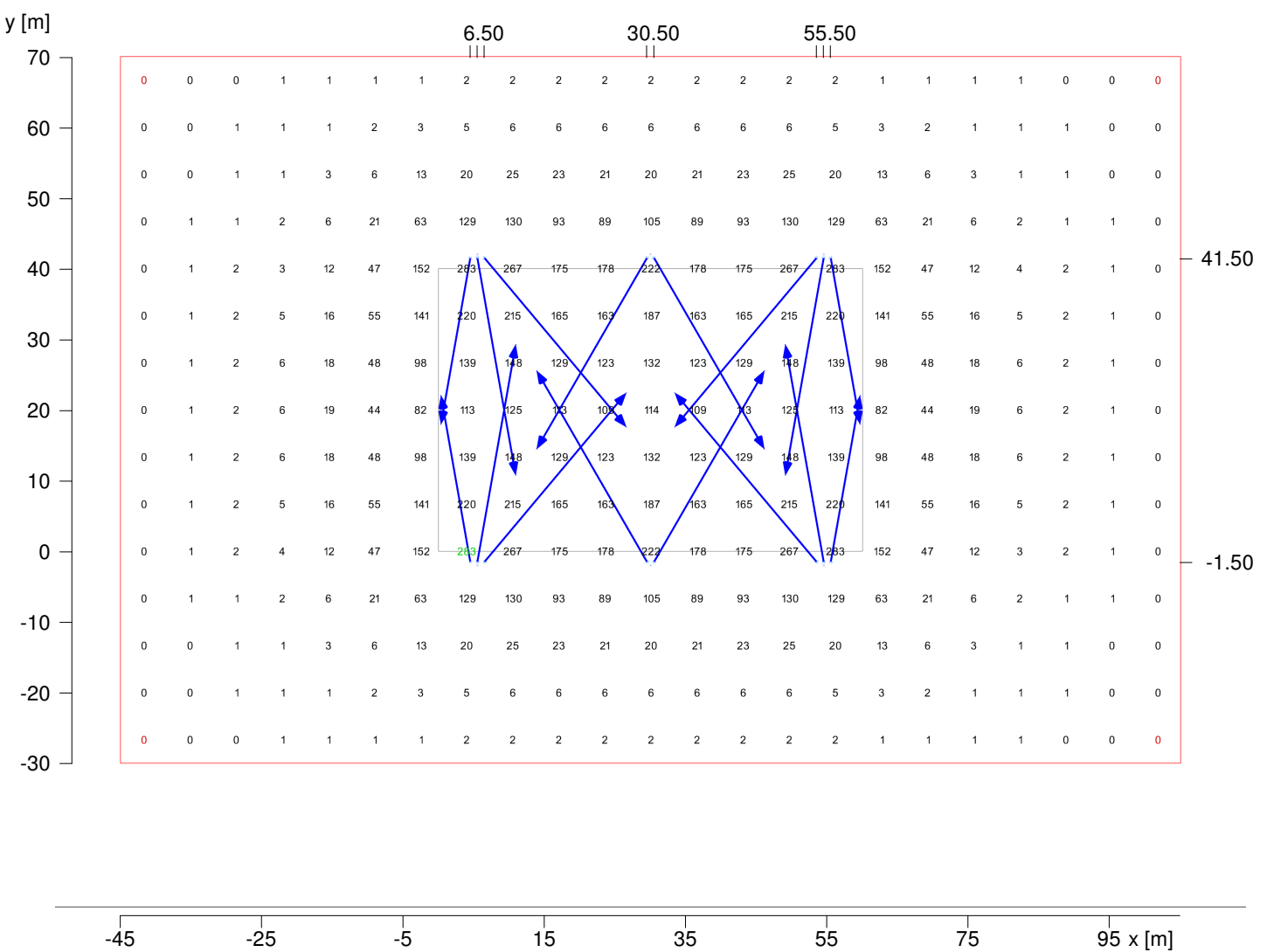
#### Type No.\Make

1	16 x	<b>BELL Lighting Limited</b>	Order No.	: IEX1 11491
			Luminaire name	: Skyline Virtus 300W 4000K Asymmetric Floodlight
			Equipment	: 1 x LED 840 300.1 W / 46090 lm

# Horizontal Spillage

## Description, Horizontal Spillage

### Floor plan

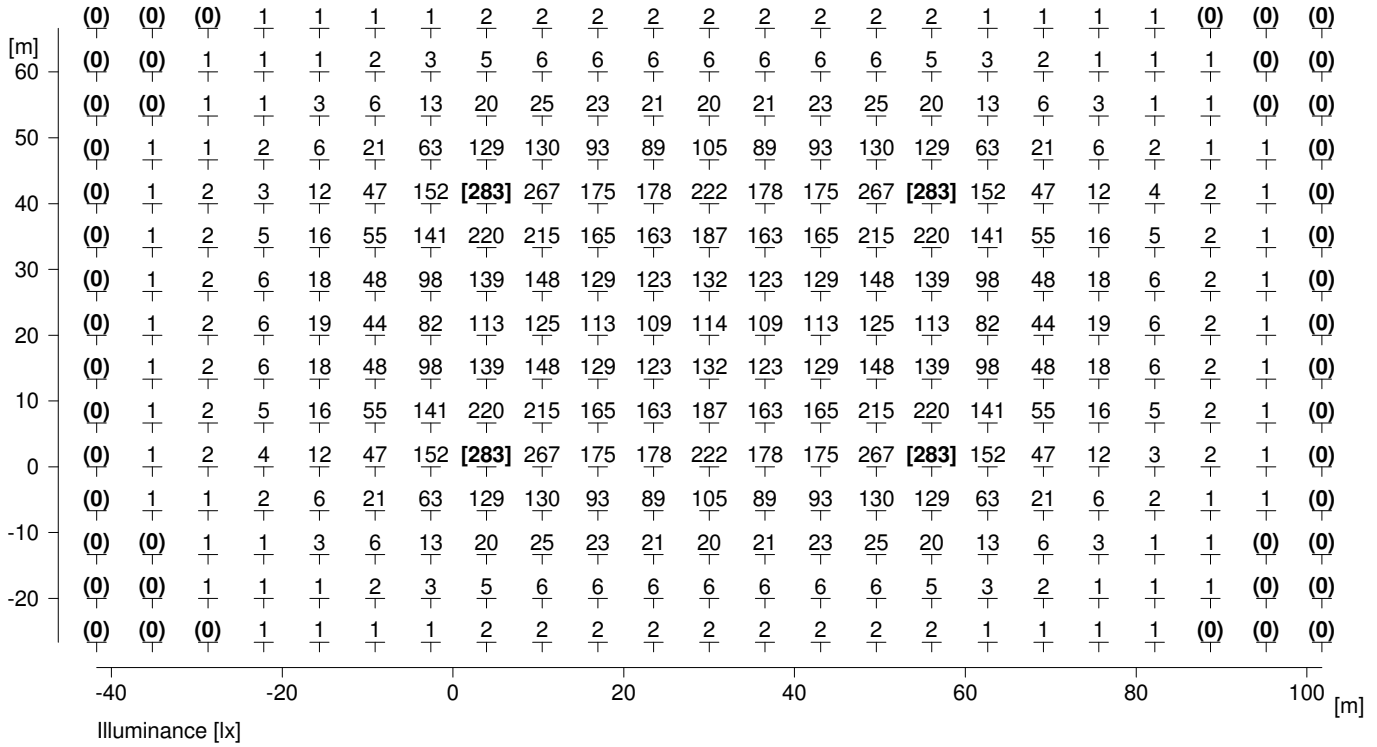




## Horizontal Spillage

### Calculation results, Horizontal Spillage

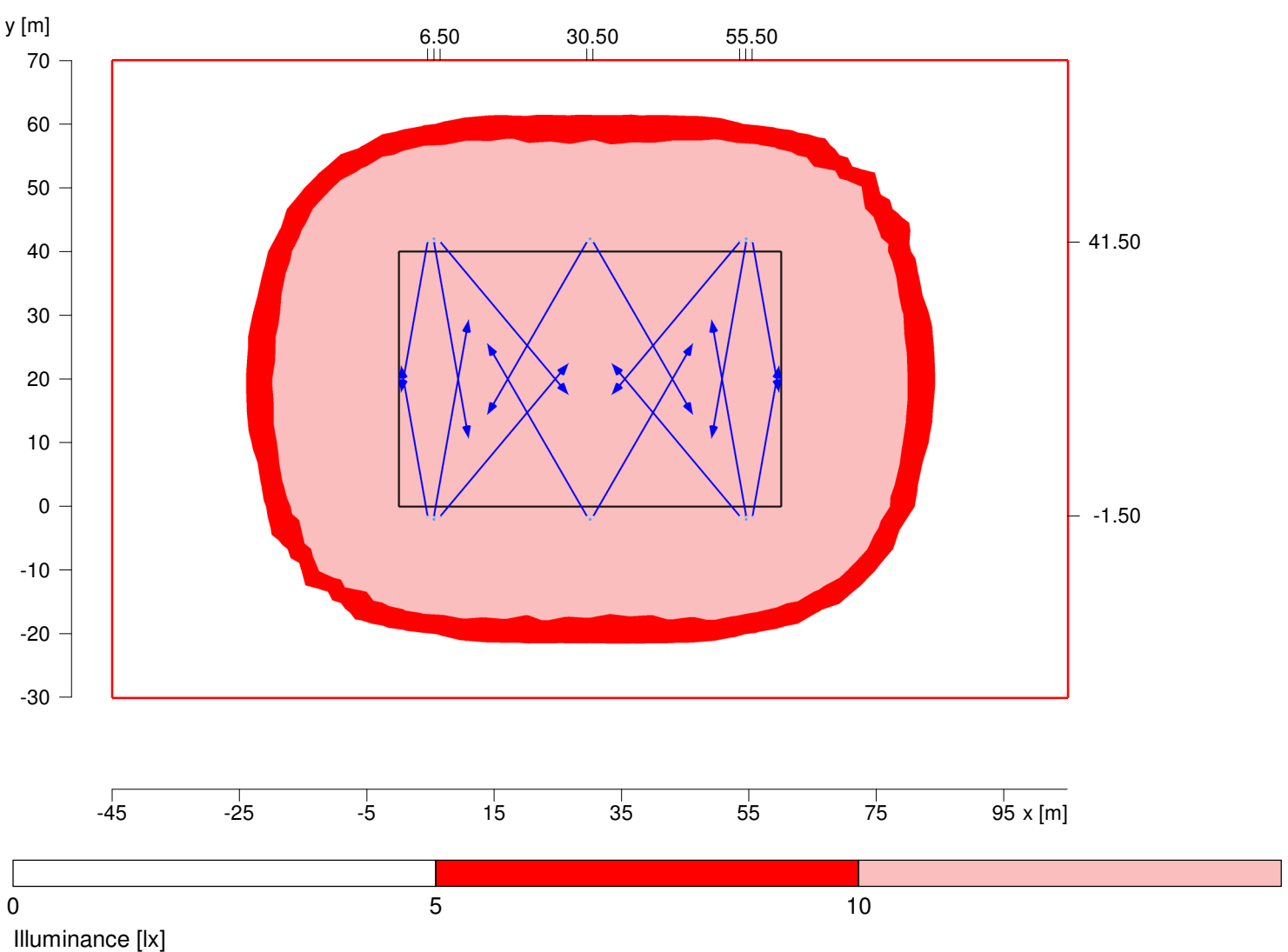
Table, Horizontal Spillage (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 49 lx
Minimum illuminance	$E_{min}$	: 0.2 lx
Maximum illuminance	$E_{max}$	: 283 lx
Uniformity $U_o$	$E_{min}/\bar{E}_m$	: 1 : 234.21 (0.00)
Diversity $U_d$	$E_{min}/E_{max}$	: 1 : 1367.77 (0.00)

## Calculation results, Horizontal Spillage

### Boundary line, Horizontal Spillage (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 49 lx
Minimum illuminance	$E_{min}$	: 0.2 lx
Maximum illuminance	$E_{max}$	: 283 lx
Uniformity $U_o$	$E_{min}/\bar{E}_m$	: 1 : 234.21 (0.00)
Diversity $U_d$	$E_{min}/E_{max}$	: 1 : 1367.77 (0.00)