

Northwood Lawn Tennis Club

Outdoor LED Tennis Lighting Design

Project code:

6318

Date:

04/10/2023

Client:

Northwood Lawn Tennis Club

Client Representative:

Lighting Consultant:

Project Consultant:

Planning Consultant:

Lighting Design Company:

Luminance Pro Lighting Systems Ltd

Lighting Design Representative:

Matthew Haskins

Lighting Design Software:

CalcuLux Area 7.7.0.1

Design Criteria:

To provide a lighting scheme suitable for Lawn Tennis Associations recommended standard, whilst minimising light spill and glare to neighbouring properties.

PPA = 500 Lux maintained at 0.7 uniformity

TPA = 400 Lux maintained at 0.6 uniformity

Columns:

15 No. Existing columns to be utilised

Luminaires:

18 No. (HiLux model: Match LED)

Notes:

This lighting design is solely based on the use of the equipment detailed. Any deviation from this equipment will produce differing results.

The superior optics of the HiLux Match LED luminaire have been specifically selected to minimise the effects of nuisance overspill to adjacent dwellings.

The nominal values shown in this report are the result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply.

luminance pro
lighting systems

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HiLux

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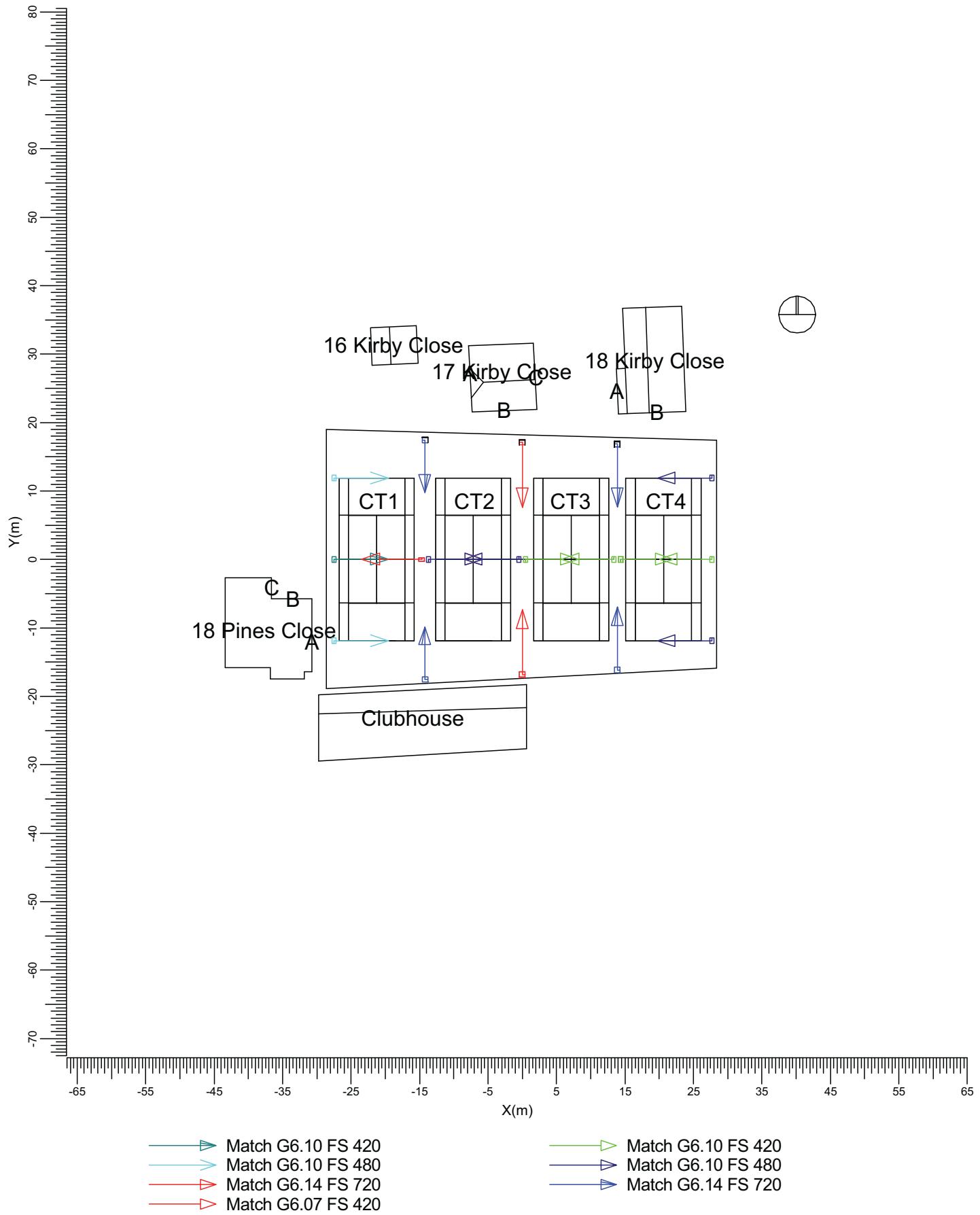


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1. Project Description

1.1 Top Project Overview



2. Summary

2.1 General Information

The overall maintenance factor used for this project is 0.90.

2.2 Obstacle Information

Obstacle	Transparency (%)	Position		
		X (m)	Y (m)	Z (m)
Fence	0	-28.56	20.01	0.00
Fence 2	0	-29.80	-19.20	0.00
Side Deflector 01	0	-27.81	-0.41	6.90
Rear Deflector 01	0	-27.82	0.41	6.90
Side Deflector 02	0	-27.81	12.29	6.90
		28.01	12.29	6.90
Side Deflector 03	0	-13.79	17.83	6.89
Rear Deflector 02	0	-14.64	17.83	6.89
Rear Deflector 03	0	-0.43	17.49	6.86
Rear Deflector 04	0	13.45	17.22	6.86
Side Deflector 04	0	14.30	17.22	6.86
		13.46	17.22	6.86
Rear Deflector 05	0	-27.81	-11.49	6.90
Side Deflector 05	0	-0.43	17.49	6.86
		0.43	17.49	6.86

2.3 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
F	1	Match G6.10 FS 420	1 * LED 05+2	406.0	1 * 63420
G	4	Match G6.10 FS 420	1 * LED 06+1	406.0	1 * 62460
I	2	Match G6.10 FS 480	1 * LED 04+4	464.0	1 * 74430
K	4	Match G6.10 FS 480	1 * LED 06+2	464.0	1 * 72300
c	2	Match G6.14 FS 720	1 * LED 09+3	696.0	1 * 107610
d	4	Match G6.14 FS 720	1 * LED 10+2	696.0	1 * 106550
q	1	Match G6.07 FS 420	1 * LED 06+01	406.0	1 * 59495

The total installed power: 10.44 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code						
	F	G	I	K	c	d	q
Court 1	1	0	2	0	0	2	1
Court 2	0	0	0	2	2	2	0
Court 3	0	2	0	0	2	2	0
Court 4	0	2	0	2	0	2	0
All Lights	1	4	2	4	2	4	1

Switching Mode Power (kWatt)

Court 1	3.31
Court 2	4.06
Court 3	3.94
Court 4	3.31
All Lights	9.40

Number of Luminaires Per Arrangement:

Arrangement	Luminaire Code						
	F	G	I	K	c	d	q
CT1 P1	0	0	2	0	0	0	0

Arrangement	Luminaire Code						
	F	G	I	K	c	d	q
CT1 P2	1	0	0	0	0	0	0
CT1 P3	0	0	0	0	0	0	1
CT1,2 P1	0	0	0	0	0	2	0
CT2 P1	0	0	0	1	0	0	0
CT2 P2	0	0	0	1	0	0	0
CT2,3 P1	0	0	0	0	2	0	0
CT3 P1	0	1	0	0	0	0	0
CT3 P2	0	1	0	0	0	0	0
CT3,4 P1	0	0	0	0	0	2	0
CT4 P1	0	1	0	0	0	0	0
CT4 P2	0	0	0	2	0	0	0
CT4 P3	0	1	0	0	0	0	0

Arrangement	Power (kWatt)
CT1 P1	0.93
CT1 P2	0.41
CT1 P3	0.58
CT1,2 P1	1.39
CT2 P1	0.64
CT2 P2	0.64
CT2,3 P1	1.39
CT3 P1	0.58
CT3 P2	0.58
CT3,4 P1	1.39
CT4 P1	0.58
CT4 P2	0.93
CT4 P3	0.41

2.4 Calculation Results

Switching Modes:

Code	Switching Mode
1	Court 1
2	Court 2
3	Court 3
4	Court 4
5	All Lights

(II)luminance Calculations:

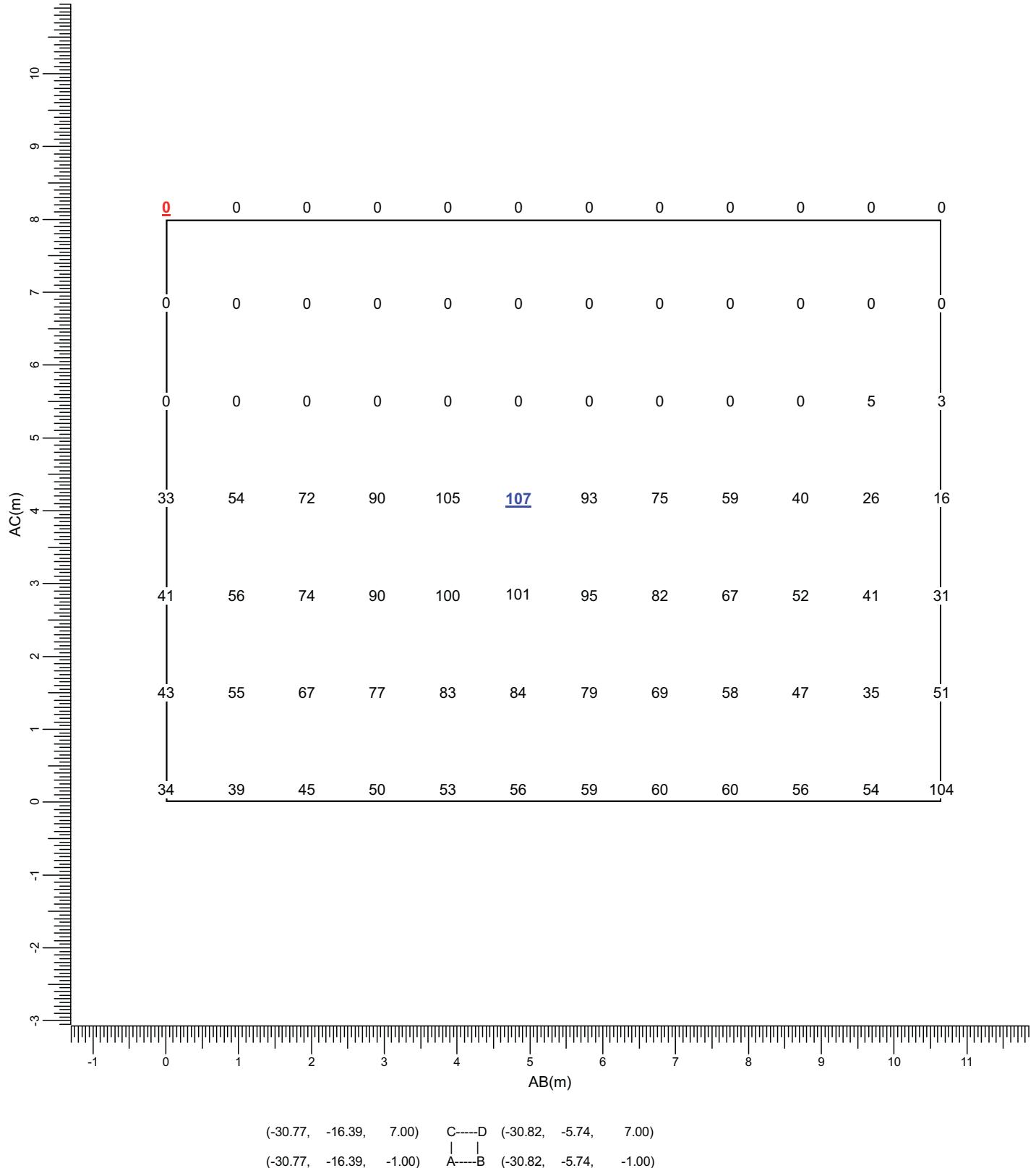
Calculation	Switching Mode	Type	Unit	Ave	Max	Min/Ave
PPA1	1	Surface Illuminance	lux	535	0.72	
PPA2	2	Surface Illuminance	lux	521	0.73	
PPA3	3	Surface Illuminance	lux	529	0.82	
PPA4	4	Surface Illuminance	lux	548	0.82	
TPA1	1	Surface Illuminance	lux	534	0.68	
TPA2	2	Surface Illuminance	lux	519	0.69	
TPA3	3	Surface Illuminance	lux	527	0.79	
TPA4	4	Surface Illuminance	lux	531	0.63	
18 Pines Close Side A	5	Surface Illuminance	lux		106.6	
18 Pines Close Side B	5	Surface Illuminance	lux		2.13	
18 Pines Close Side C	5	Surface Illuminance	lux		2.88	
16 Kirby Close	5	Surface Illuminance	lux		0.86	
17 Kirby Close Side A	5	Surface Illuminance	lux		1.20	
17 Kirby Close Side B	5	Surface Illuminance	lux		29.98	
17 Kirby Close Side C	5	Surface Illuminance	lux		0.53	
18 Kirby Close Side A	5	Surface Illuminance	lux		0.70	
18 Kirby Close Side B	5	Surface Illuminance	lux		33.42	
Overspill	5	Surface Illuminance	lux			

3. Calculation Results

3.1 18 Pines Close Side A: Graphical Table

All Lights

Grid Calculation : 18 Pines Close Side A
: Surface Illuminance (lux)



Maximum
106.6

Project maintenance factor
0.90

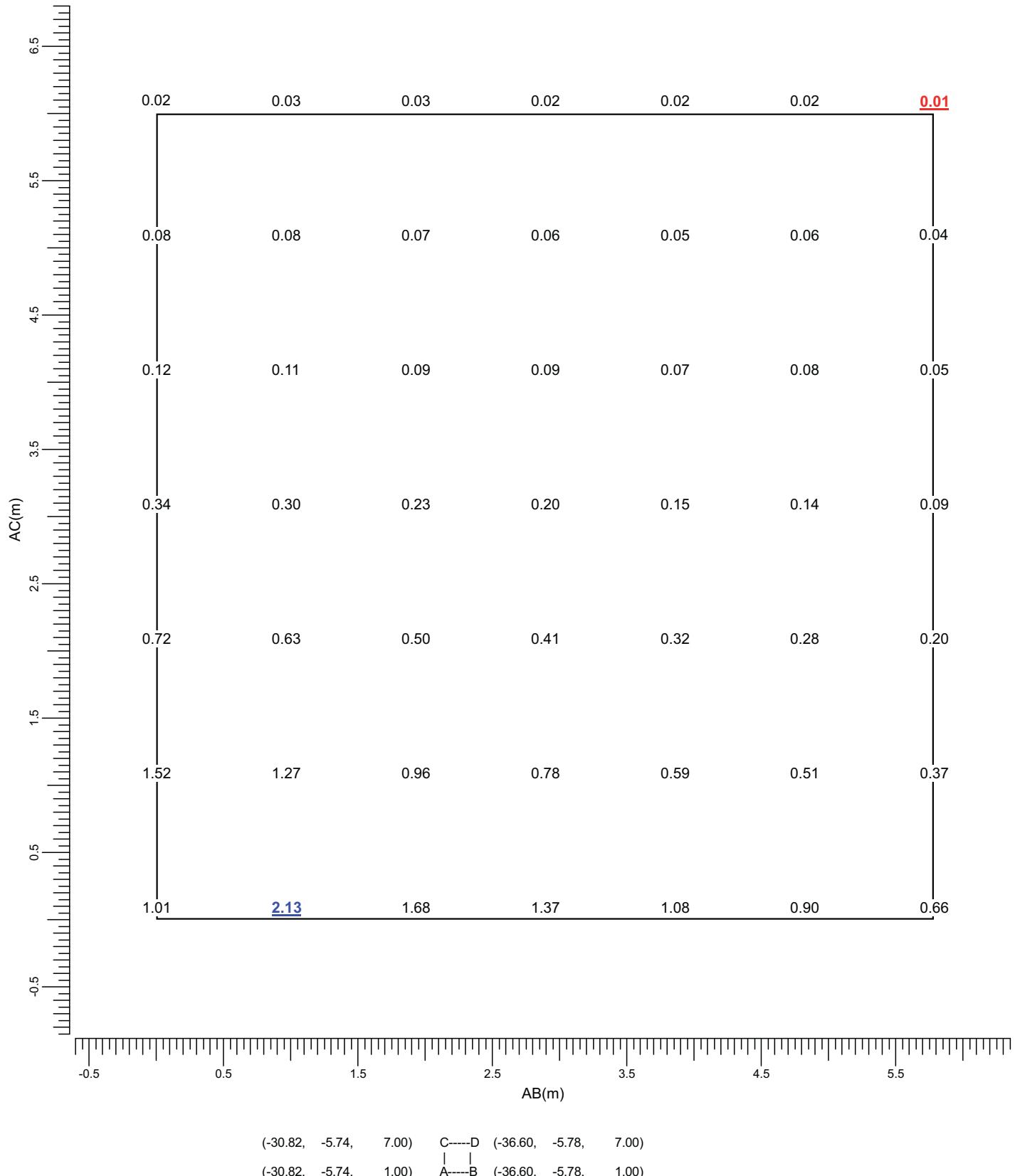
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3.2 18 Pines Close Side B: Graphical Table

All Lights

Grid
Calculation

: 18 Pines Close Side B
: Surface Illuminance (lux)



Maximum
2.13

Project maintenance factor
0.90

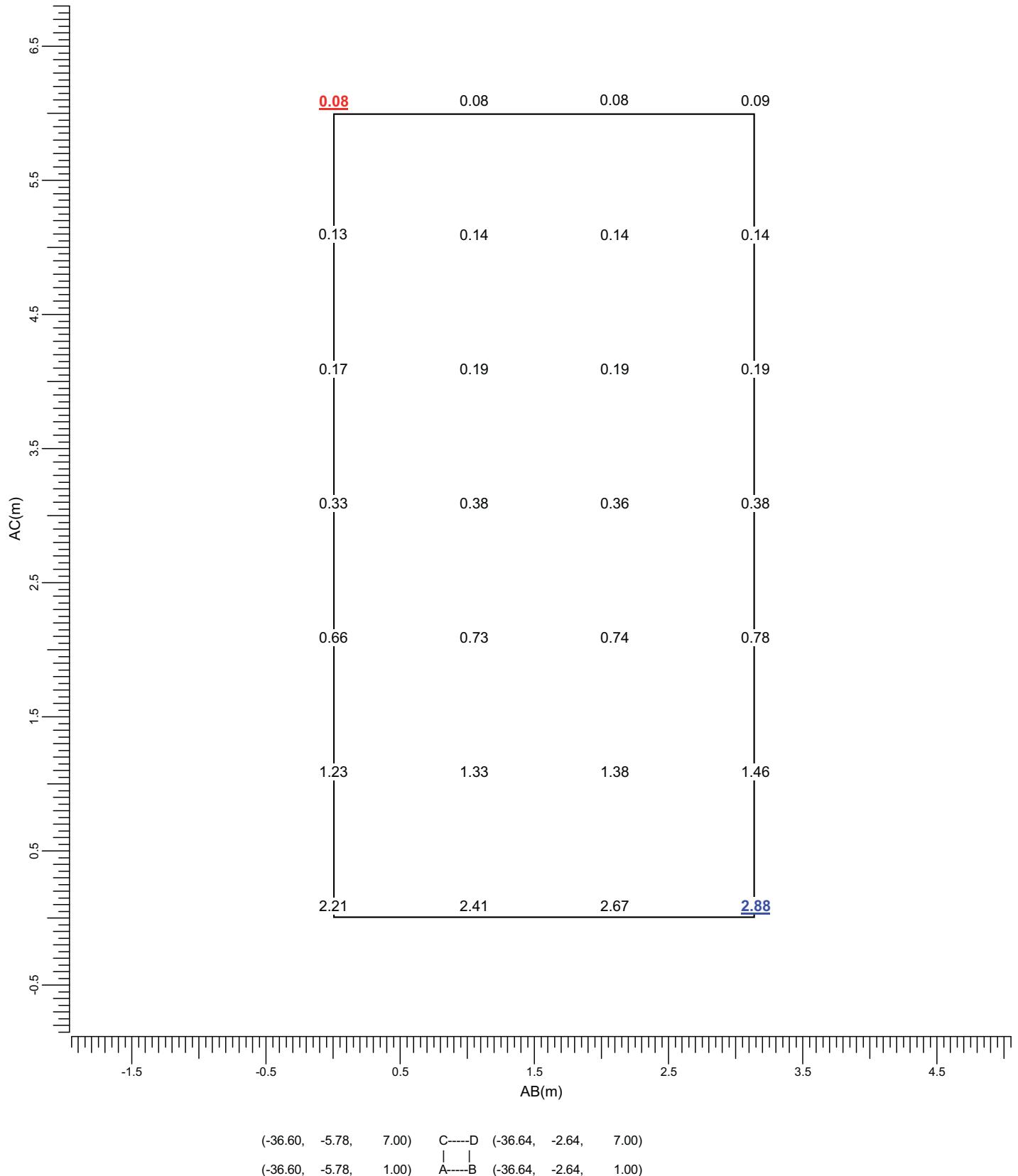
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3.3 18 Pines Close Side C: Graphical Table

All Lights

Grid
Calculation

: 18 Pines Close Side C
: Surface Illuminance (lux)



Maximum
2.88

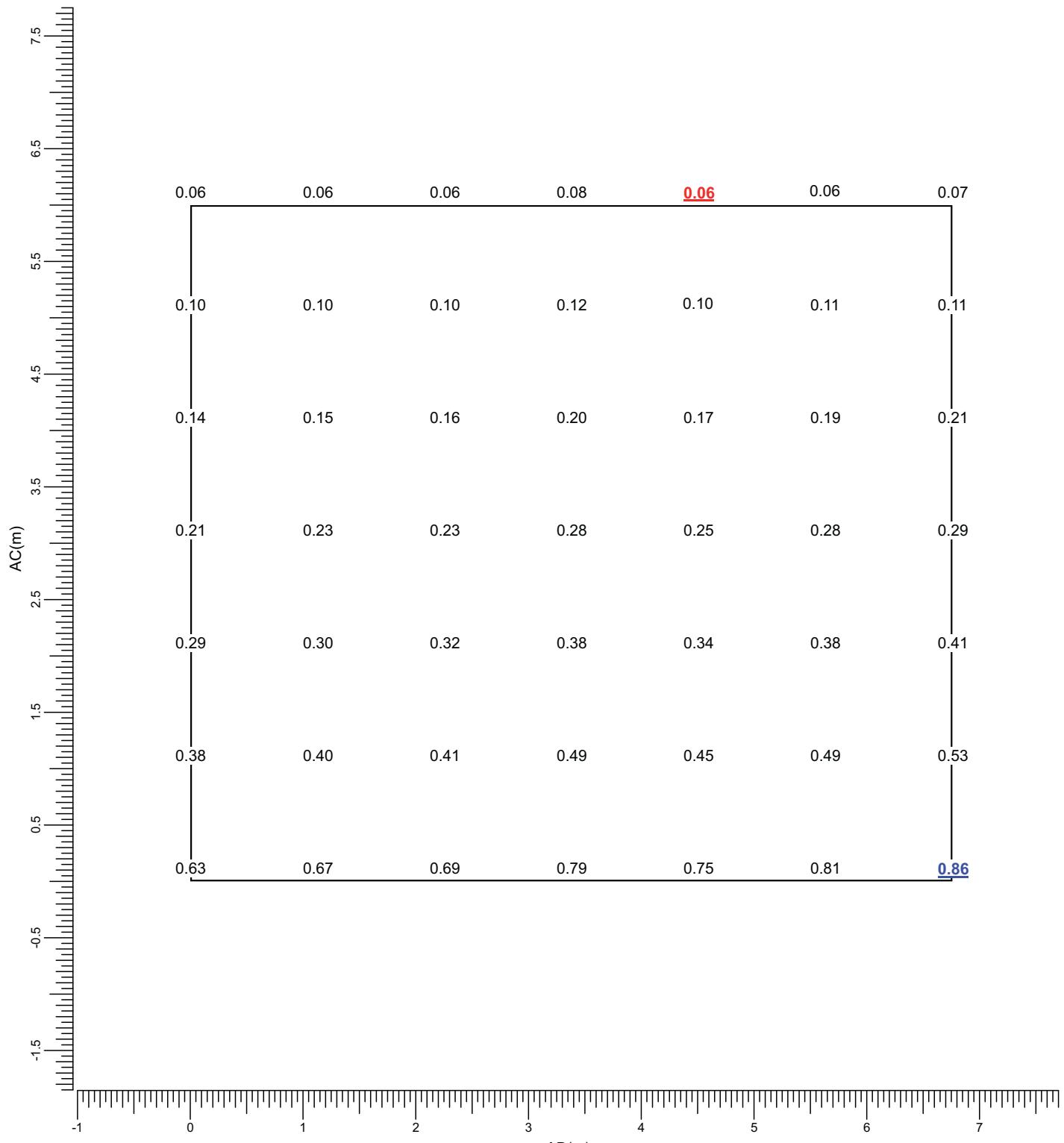
Project maintenance factor
0.90

Scale
1:40

3.4 16 Kirby Close: Graphical Table

All Lights

Grid Calculation : 16 Kirby Close
: Surface Illuminance (lux)



(-21.93, 28.38, 7.00) C---D (-15.18, 28.67, 7.00)
 (-21.93, 28.38, 1.00) A---B (-15.18, 28.67, 1.00)

Maximum
0.86

Project maintenance factor
0.90

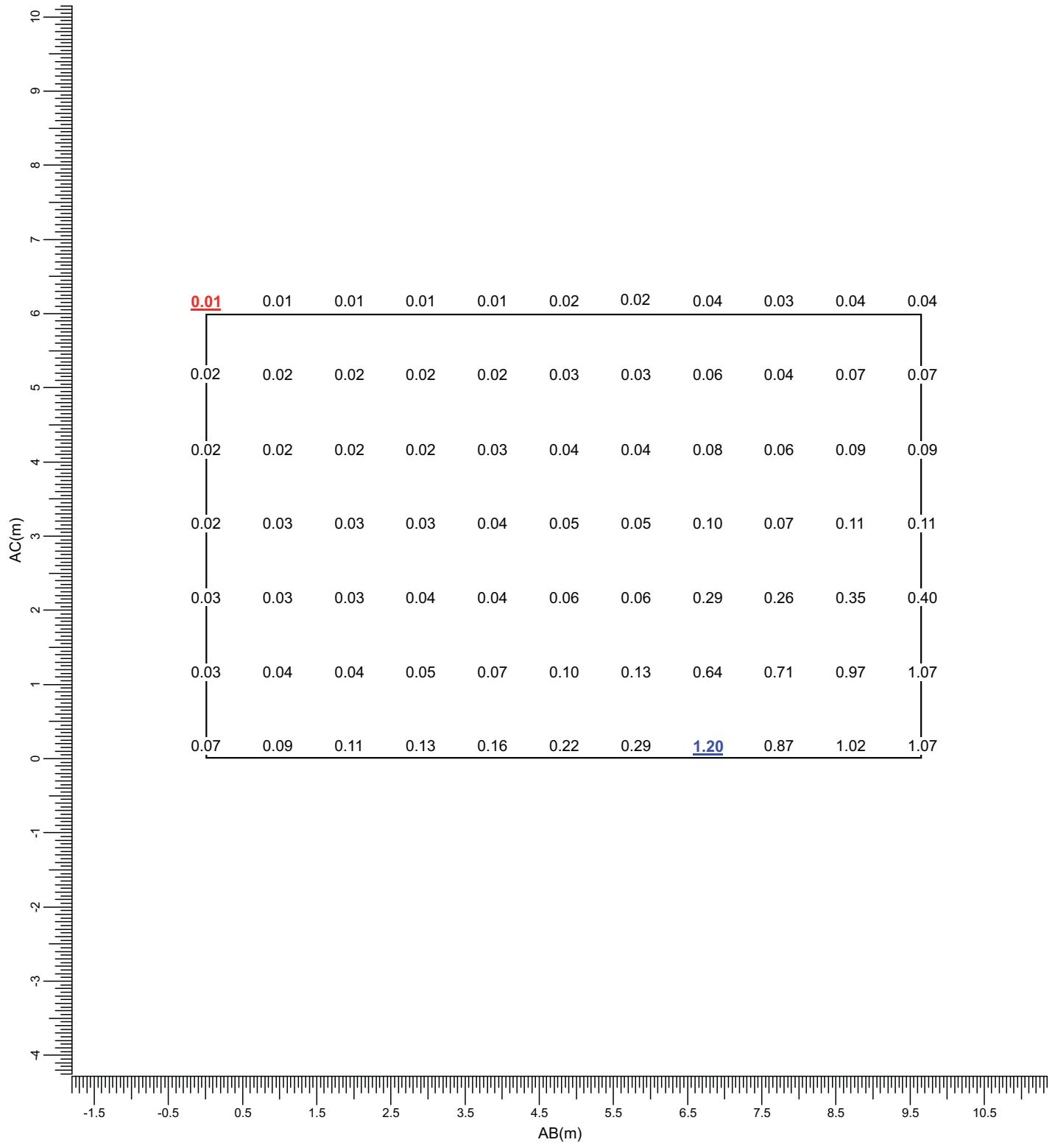
Scale
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3.5 17 Kirby Close Side A: Graphical Table

All Lights

Grid
Calculation

: 17 Kirby Close Side A
: Surface Illuminance (lux)



(-7.93, 31.19, 7.00) C---D (-7.34, 21.55, 7.00)
 (-7.93, 31.19, 1.00) A---B (-7.34, 21.55, 1.00)

Maximum
1.20

Project maintenance factor
0.90

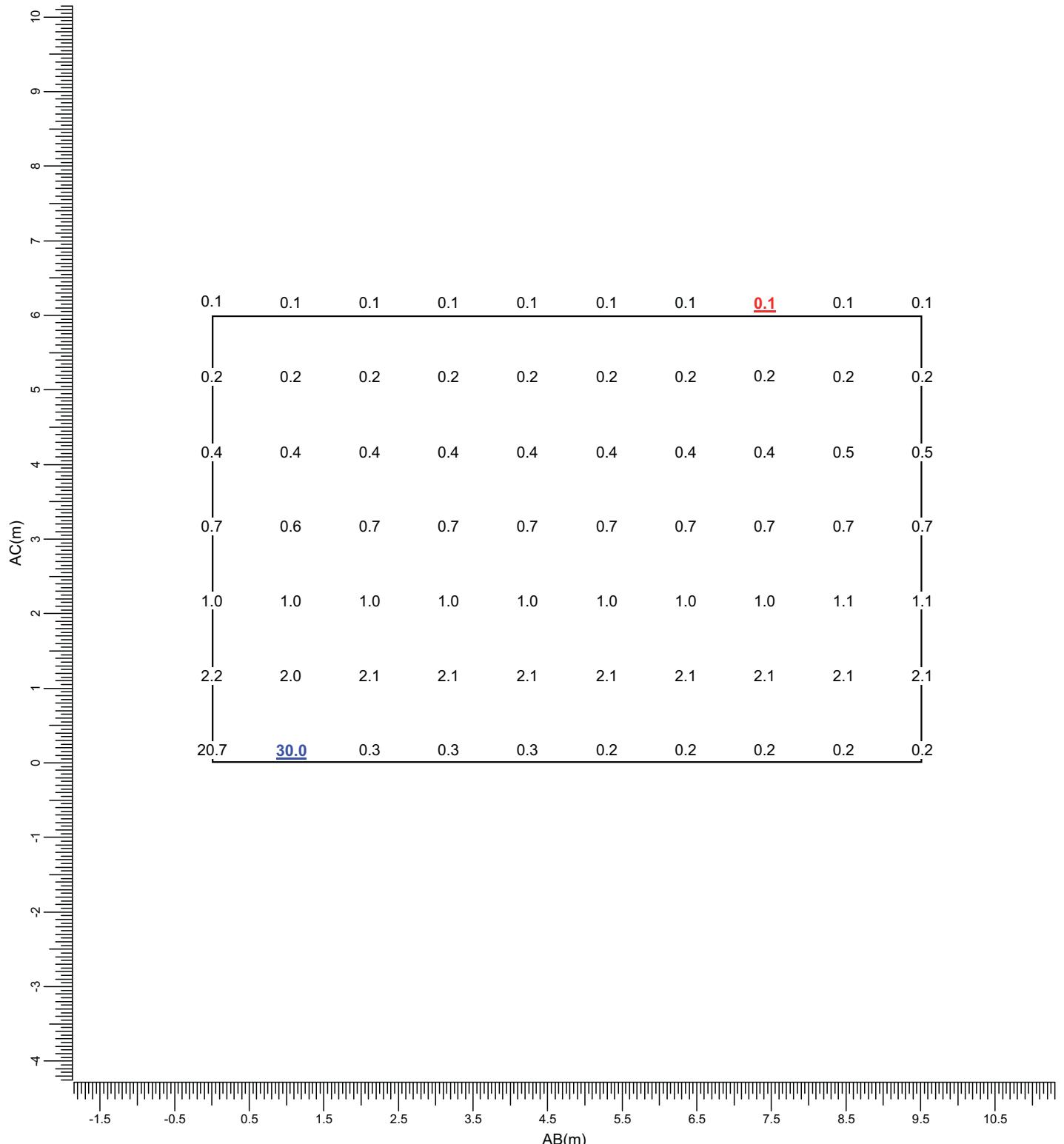
Scale
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3.6 17 Kirby Close Side B: Graphical Table

All Lights

Grid
Calculation

: 17 Kirby Close Side B
: Surface Illuminance (lux)



(-7.34, 21.55, 7.00) C---D (2.17, 22.01, 7.00)
 (-7.34, 21.55, 1.00) | |
 (-7.34, 21.55, 1.00) A---B (2.17, 22.01, 1.00)

Maximum
29.98

Project maintenance factor
0.90

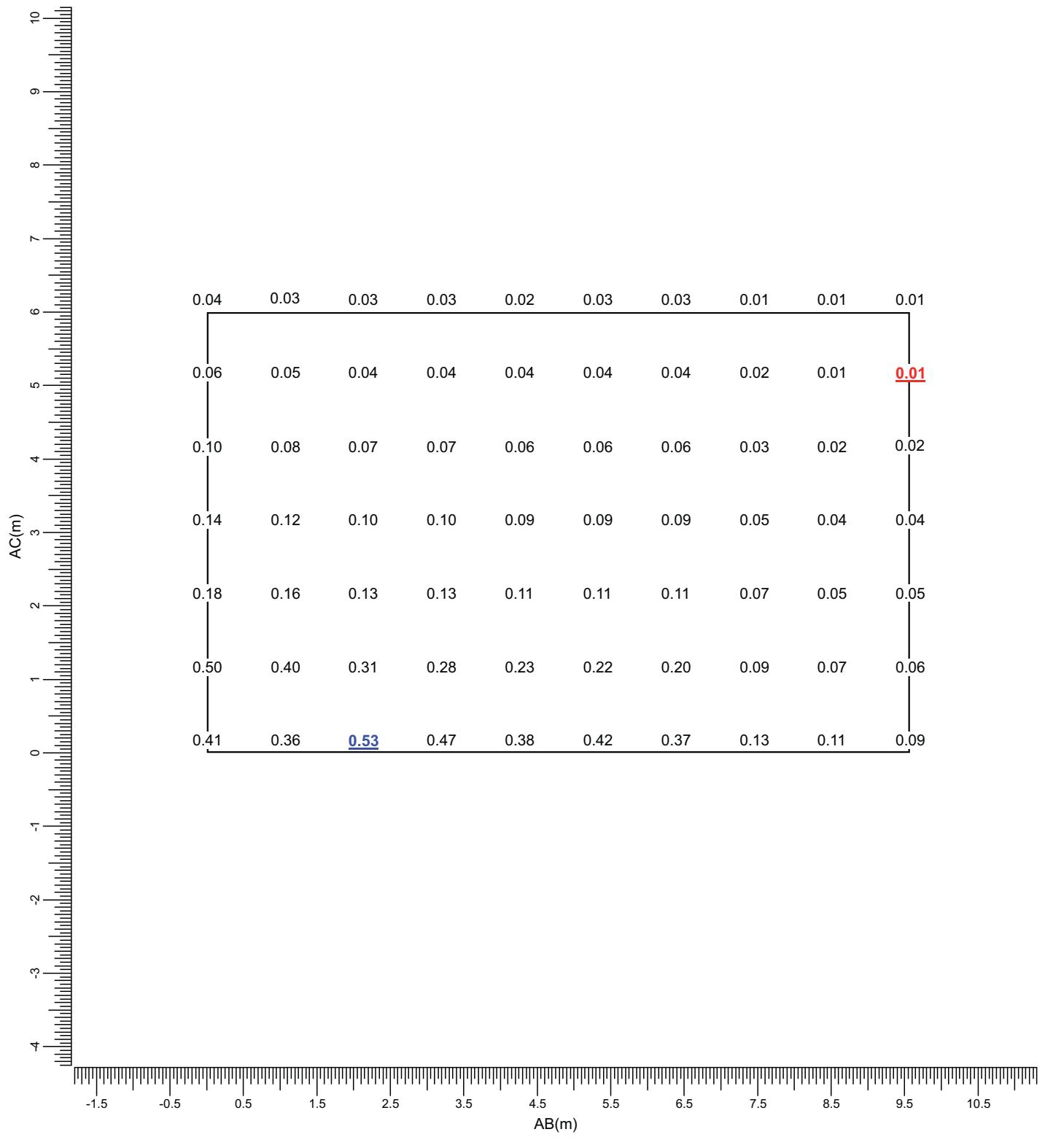
Scale
1:75

3.7 17 Kirby Close Side C: Graphical Table

All Lights

Grid
Calculation

: 17 Kirby Close Side C
: Surface Illuminance (lux)



(2.17, 22.01, 7.00) C---D (1.63, 31.57, 7.00)
(2.17, 22.01, 1.00) | | (1.63, 31.57, 1.00)
A---B

Maximum
0.53

Project maintenance factor
0.90

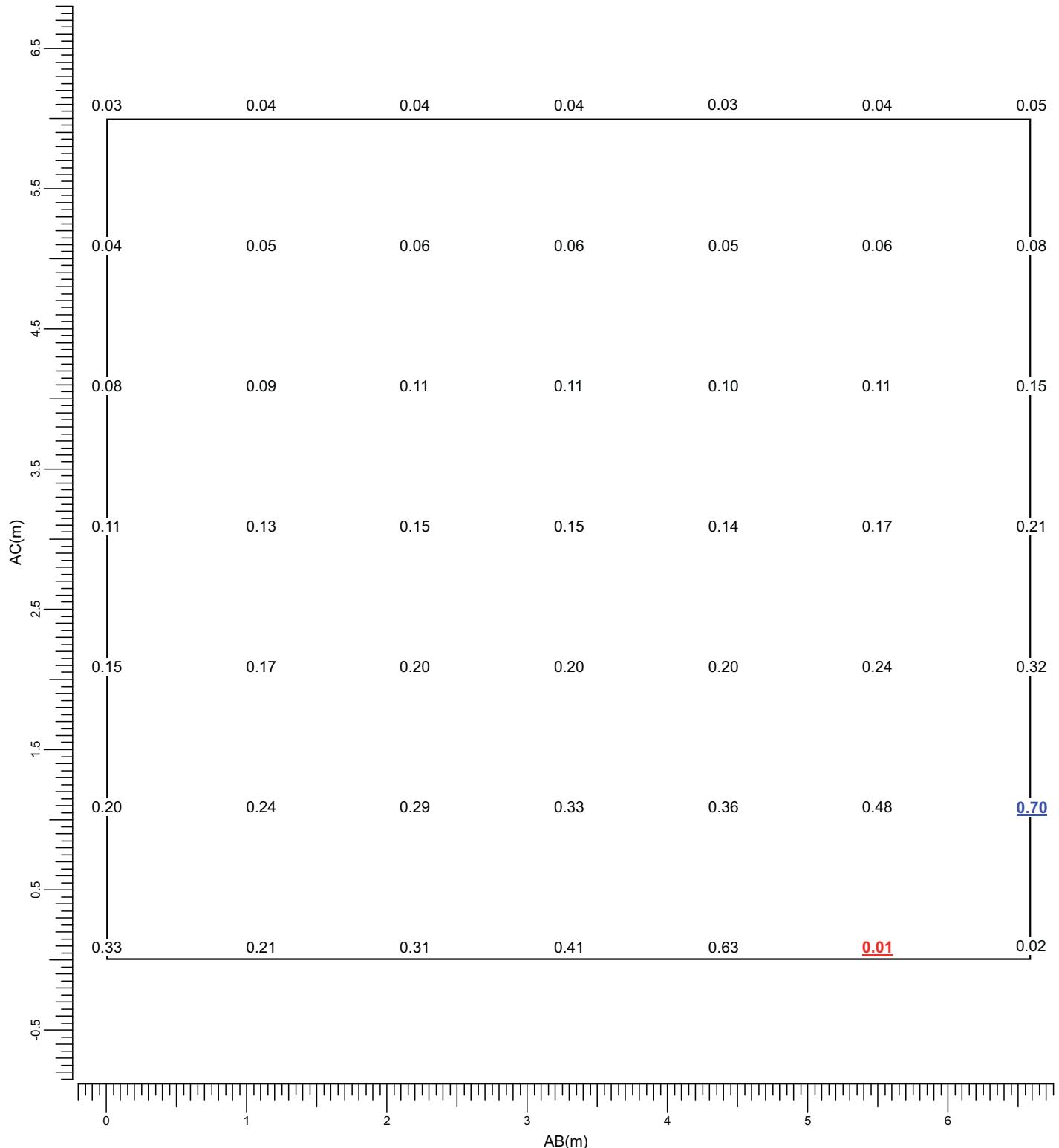
Scale
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3.8 18 Kirby Close Side A: Graphical Table

All Lights

Grid
Calculation

: 18 Kirby Close Side A
: Surface Illuminance (lux)



(13.74, 27.79, 7.00) C---D (14.12, 21.21, 7.00)
(13.74, 27.79, 1.00) A---B (14.12, 21.21, 1.00)

Maximum
0.70

Project maintenance factor
0.90

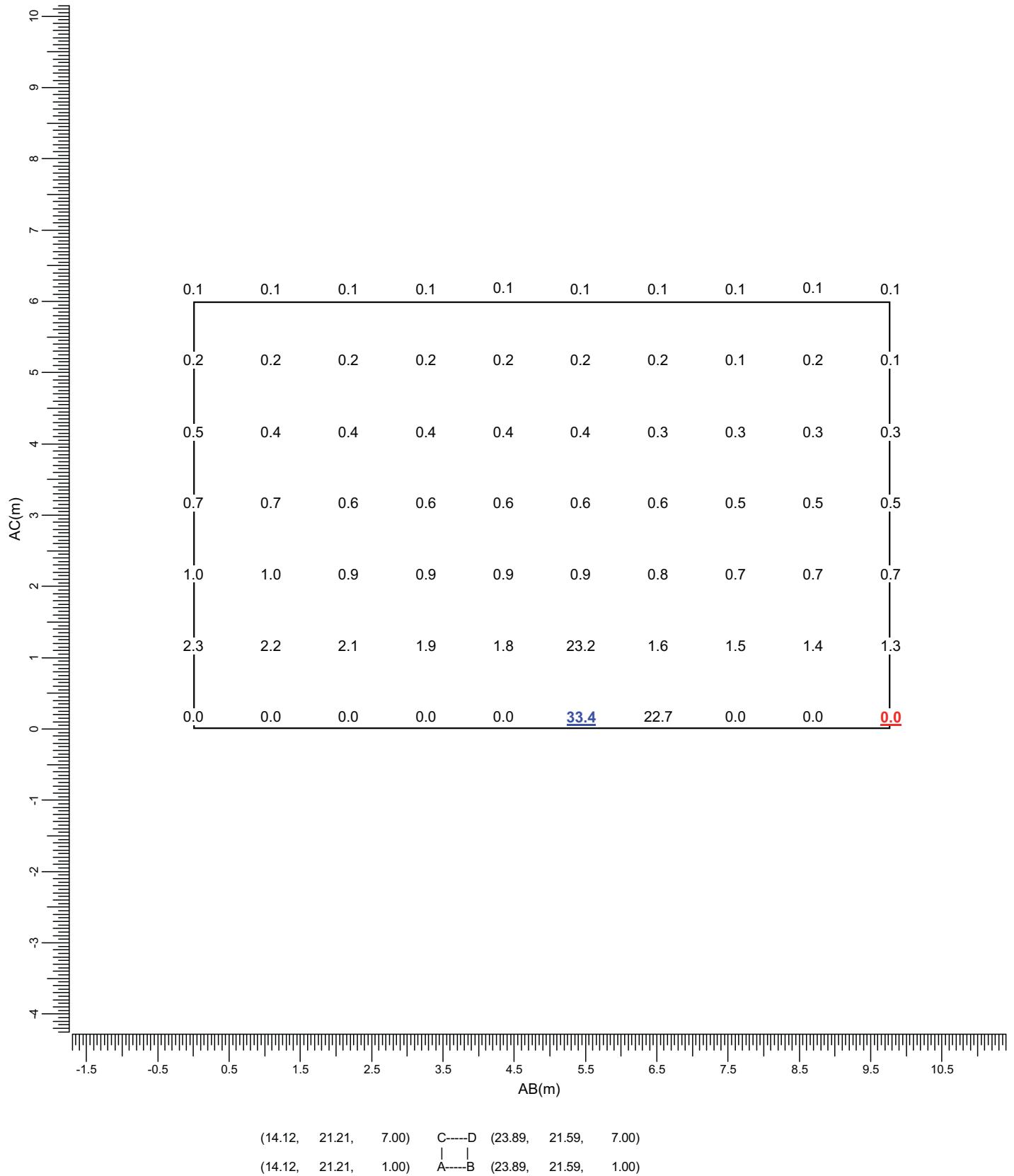
Scale
1:40

3.9 18 Kirby Close Side B: Graphical Table

All Lights

Grid
Calculation

: 18 Kirby Close Side B
: Surface Illuminance (lux)



Maximum
33.42

Project maintenance factor
0.90

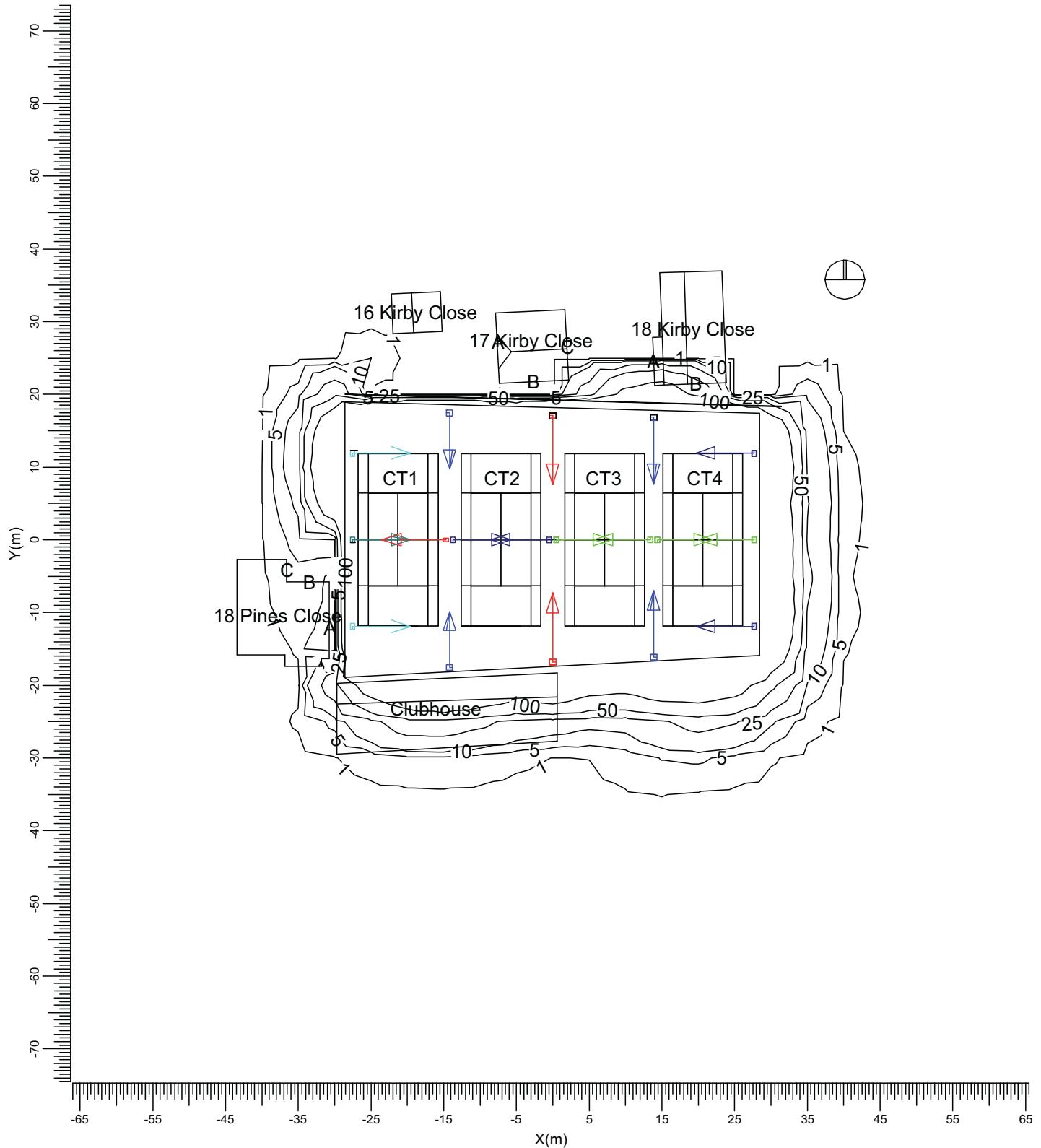
Scale
1:75

3.10 Overspill: Iso Contour

All Lights

Grid
Calculation

: Overspill at Z = -0.00 m
: Surface Illuminance (lux)



Project maintenance factor
0.90

Scale
1:750

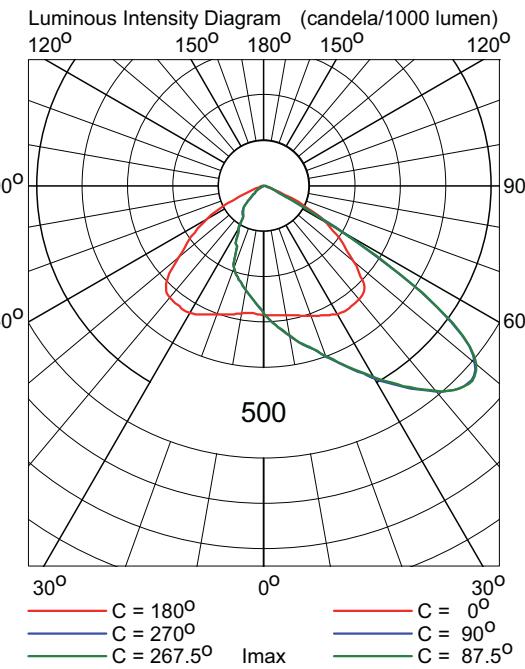
4. Luminaire Details

4.1 Project Luminaires

Match G6.10 FS 420

Light output ratios

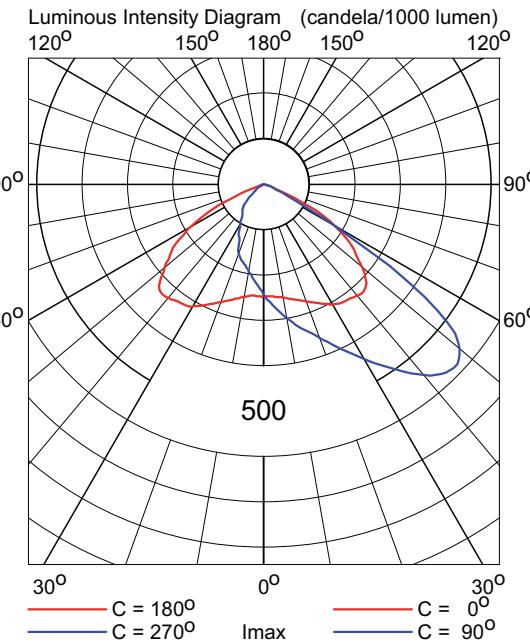
DLOR	:	1.00
ULOR	:	0.00
TLOR	:	1.00
Lamp flux	:	63420 lm
Luminaire wattage	:	406.0 W
Measurement code	:	321V1.5



Match G6.10 FS 420

Light output ratios

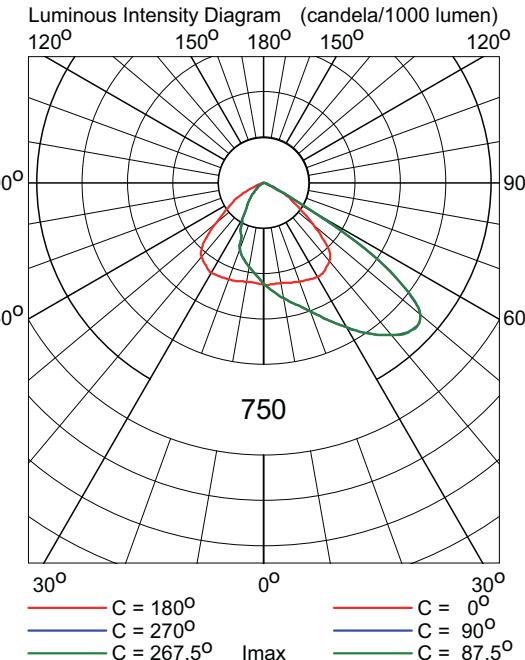
DLOR	:	1.00
ULOR	:	0.00
TLOR	:	1.00
Lamp flux	:	62460 lm
Luminaire wattage	:	406.0 W
Measurement code	:	321V1.5



Match G6.10 FS 480

Light output ratios

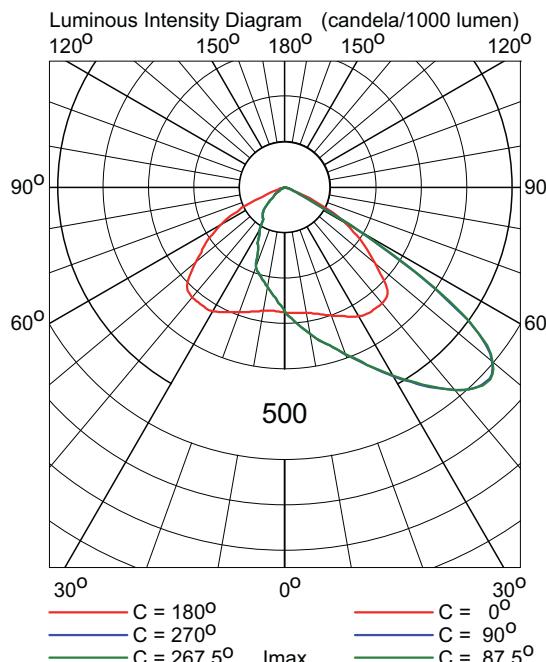
DLOR	:	1.00
ULOR	:	0.00
TLOR	:	1.00
Lamp flux	:	74430 lm
Luminaire wattage	:	464.0 W
Measurement code	:	321V1.5



Match G6.10 FS 480

Light output ratios

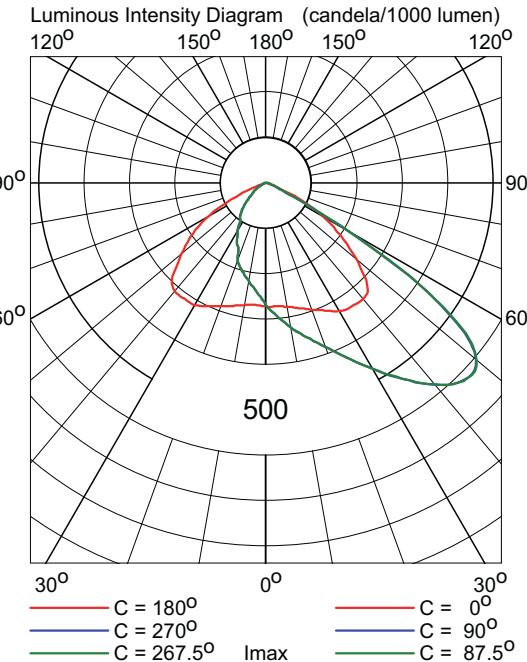
DLOR	:	1.00
ULOR	:	0.00
TLOR	:	1.00
Lamp flux	:	72300 lm
Luminaire wattage	:	464.0 W
Measurement code	:	321V1.5



Match G6.14 FS 720

Light output ratios

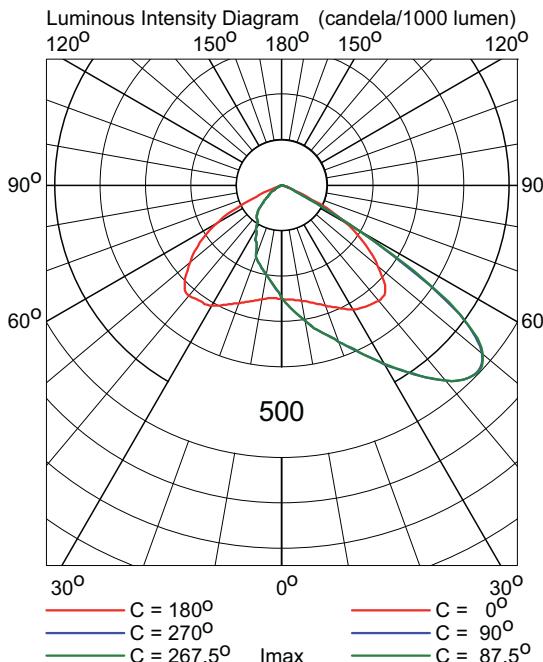
DLOR	:	1.00
ULOR	:	0.00
TLOR	:	1.00
Lamp flux	:	107610 lm
Luminaire wattage	:	696.0 W
Measurement code	:	321V1.5



Match G6.14 FS 720

Light output ratios

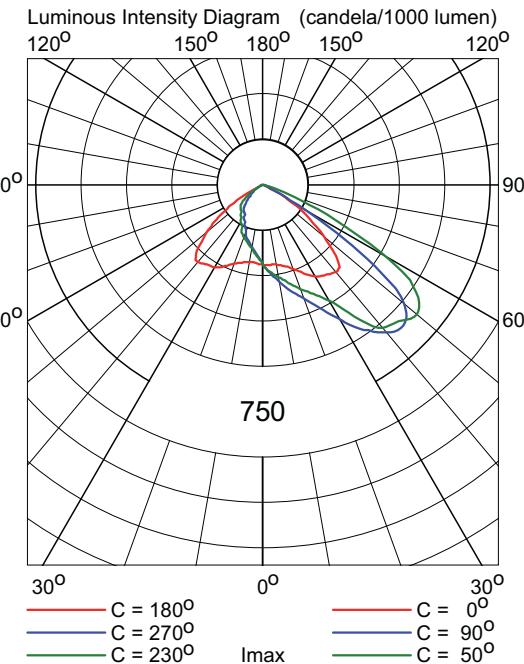
DLOR	:	1.00
ULOR	:	0.00
TLOR	:	1.00
Lamp flux	:	106550 lm
Luminaire wattage	:	696.0 W
Measurement code	:	321V1.5



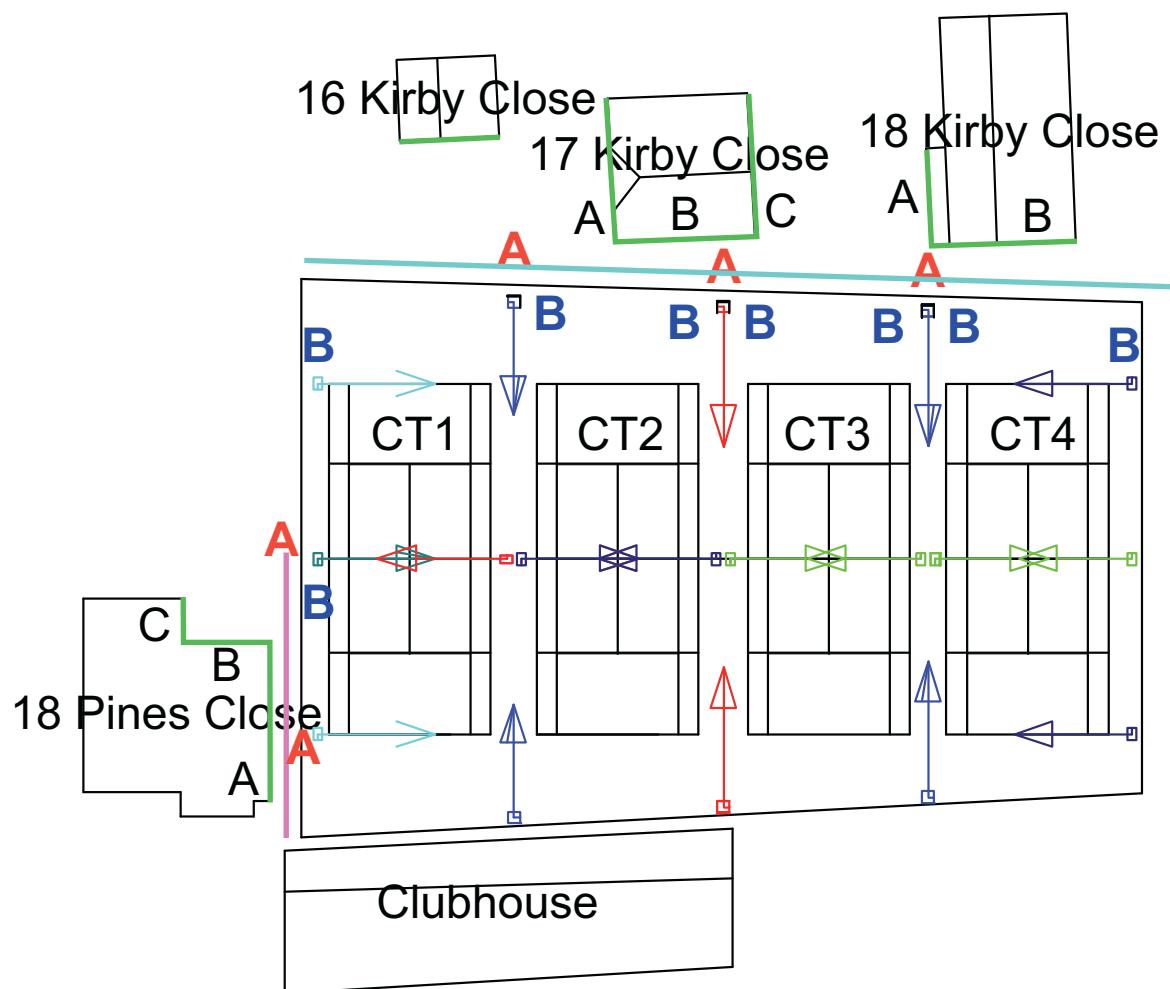
Match G6.07 FS 420

Light output ratios

DLOR	:	1.00
ULOR	:	0.00
TLOR	:	1.00
Lamp flux	:	59495 lm
Luminaire wattage	:	406.0 W
Measurement code	:	341.07v1.6

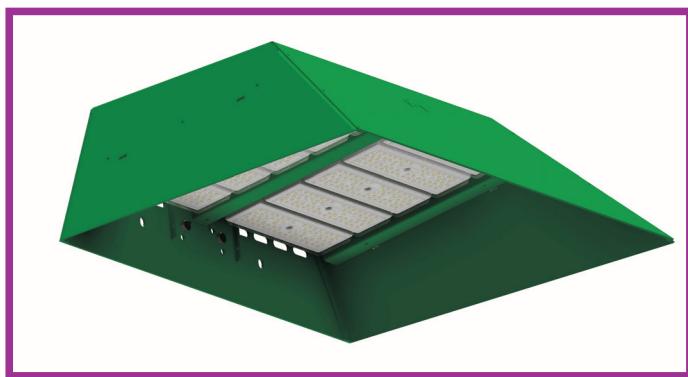


Deflector & Vertical Grid Locations



→ Match G6.10 FS 420
→ Match G6.10 FS 480
→ Match G6.14 FS 720
→ Match G6.07 FS 420
— Fence 2.1m height
A Extended Rear Deflector

→ Match G6.10 FS 420
→ Match G6.10 FS 480
→ Match G6.14 FS 720
— Vertical Grid
— Fence 1.4m height
B Extended Side Deflector

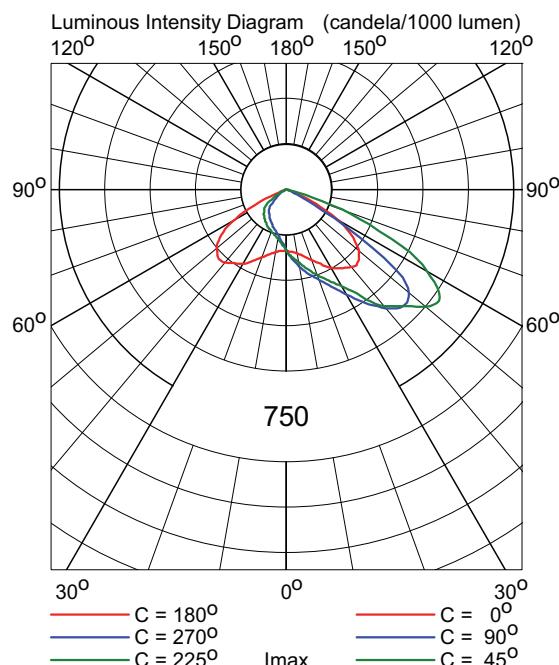


The Match LED is a new generation of HiLux high performance luminaires designed for use in sports lighting.

Match LED

Box quantity	1
Net Weight	13.0 - 19.3kg
Body colour (standard)	RAL6005
Optic	Standard**
IP rating	IP68
Windage	0.28m ²
Mounting method	4 x M10 factory fitted

Lamp type	LED
Luminaire power	360W - 600W
Lamp colour	5000 K
Supply voltage	230v



HiLux®
Match® LED

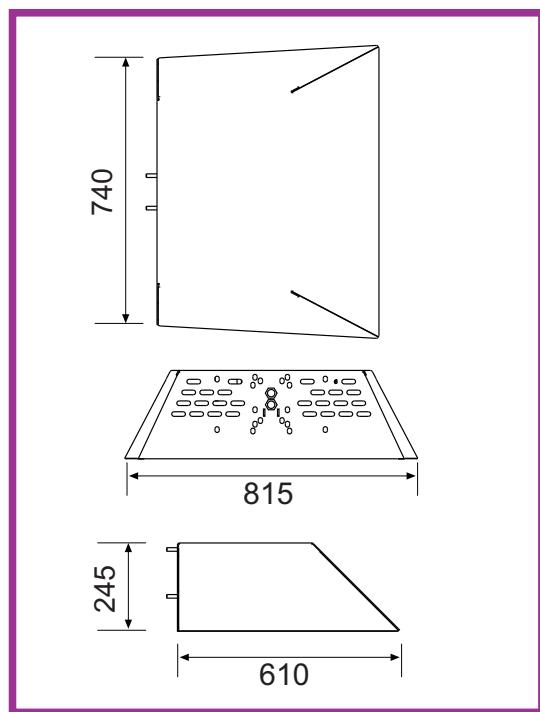
- ✓ LED low energy lighting
- ✓ Exceptional light control
- ✓ Designed for outdoor sports lighting
- ✓ Lightweight aluminium body
- ✓ Stainless steel components
- ✓ Computer designed optics
- ✓ Heavy duty mounting
- ✓ IP68 ingress protection for main elements
- ✓ Powder coat finish (RAL 6005) Green
- ✓ 5 year limited warranty via direct install*
- ✓ 5 & 10 year onsite extended warranty available*

Product code:

MATCH-FS10/LED

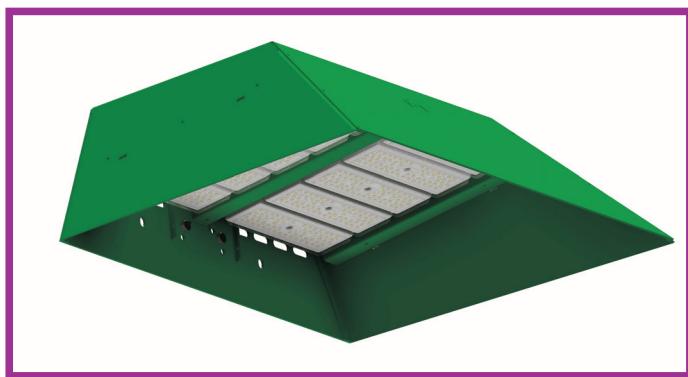
Options

/C - Alternative colour finish



* Conditions apply

** Various optics available

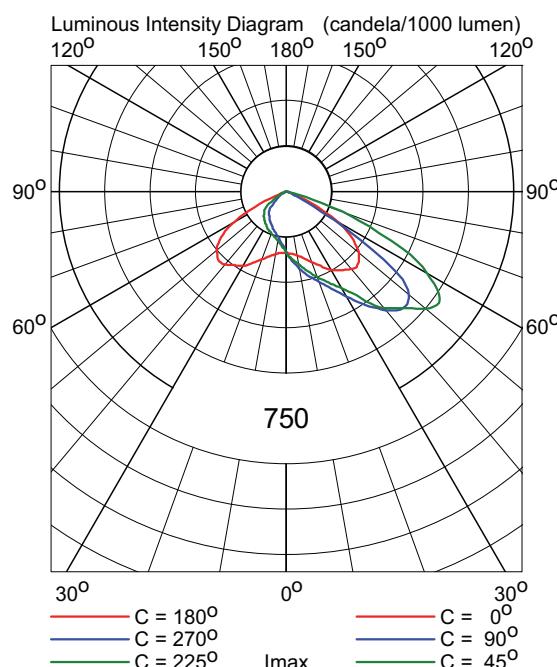


The Match LED is a new generation of HiLux high performance luminaires designed for use in sports lighting.

Match LED

Box quantity	1
Net Weight	12.3 - 25.2kg
Body colour (standard)	RAL6005
Optic	Standard**
IP rating	IP68
Windage	0.28m ²
Mounting method	4 x M10 factory fitted

Lamp type	LED
Luminaire power	600W - 840W
Lamp colour	5000 K
Supply voltage	230v



HiLux®
Match® LED

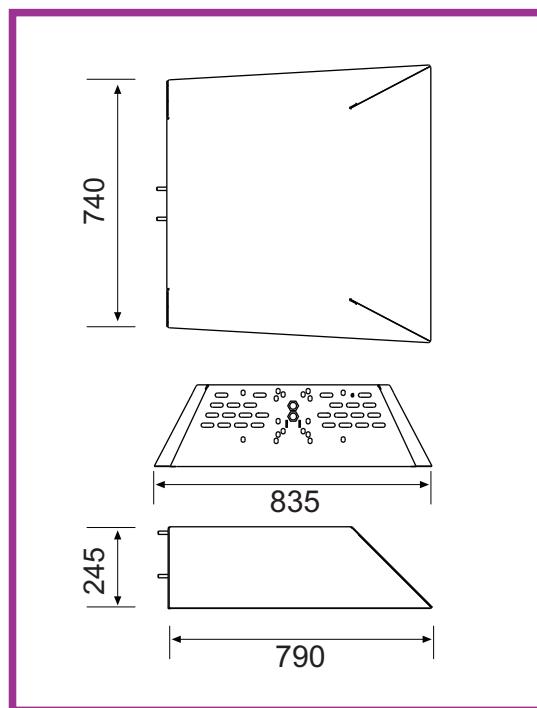
- ✓ LED low energy lighting
- ✓ Exceptional light control
- ✓ Designed for outdoor sports lighting
- ✓ Lightweight aluminium body
- ✓ Stainless steel components
- ✓ Computer designed optics
- ✓ Heavy duty mounting
- ✓ IP68 ingress protection for main elements
- ✓ Powder coat finish (RAL 6005) Green
- ✓ 5 year limited warranty via direct install*
- ✓ 5 & 10 year onsite extended warranty available*

Product code:

MATCH-FS14/LED

Options

/C - Alternative colour finish



* Conditions apply

** Various optics available