

Wythenshawe Park

Multi-Sports Hub

Project code: G-208872
Date: 11-06-2025

Designer: ME

Description: Proposed Lighting

Club Athletics lighting requirements:
Maintained average illuminance >200 lux
Uniformity Ratio (Ev.min/Ev.ave) >0.60

Football Match play requirements:
Maintained average illuminance >200 lux
Uniformity Ratio (Ev.min/Ev.ave) >0.60

MUGA lighting requirements:
Maintained average illuminance >120 lux
Uniformity Ratio (Ev.min/Ev.ave) >0.60

All luminaires have a zero upward light ratio without the use of additional accessories.

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.

Surfacing Standards LTD

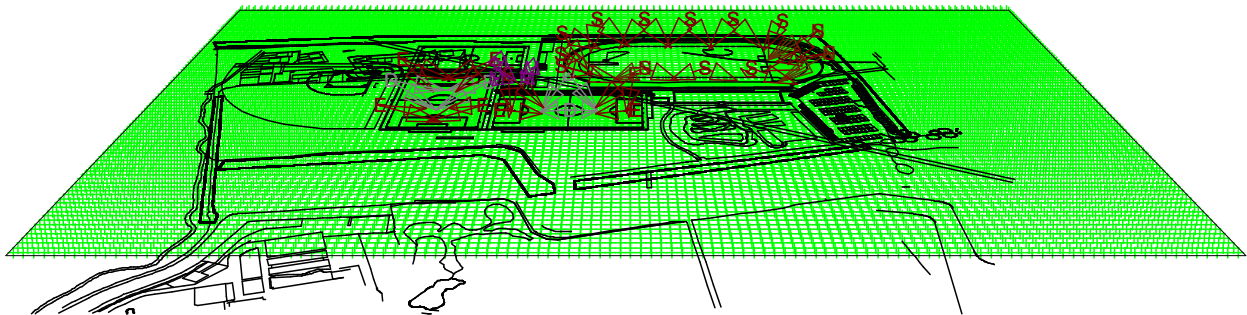
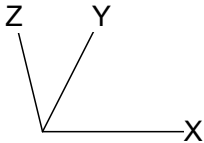
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Uppingham
LE15 9NY

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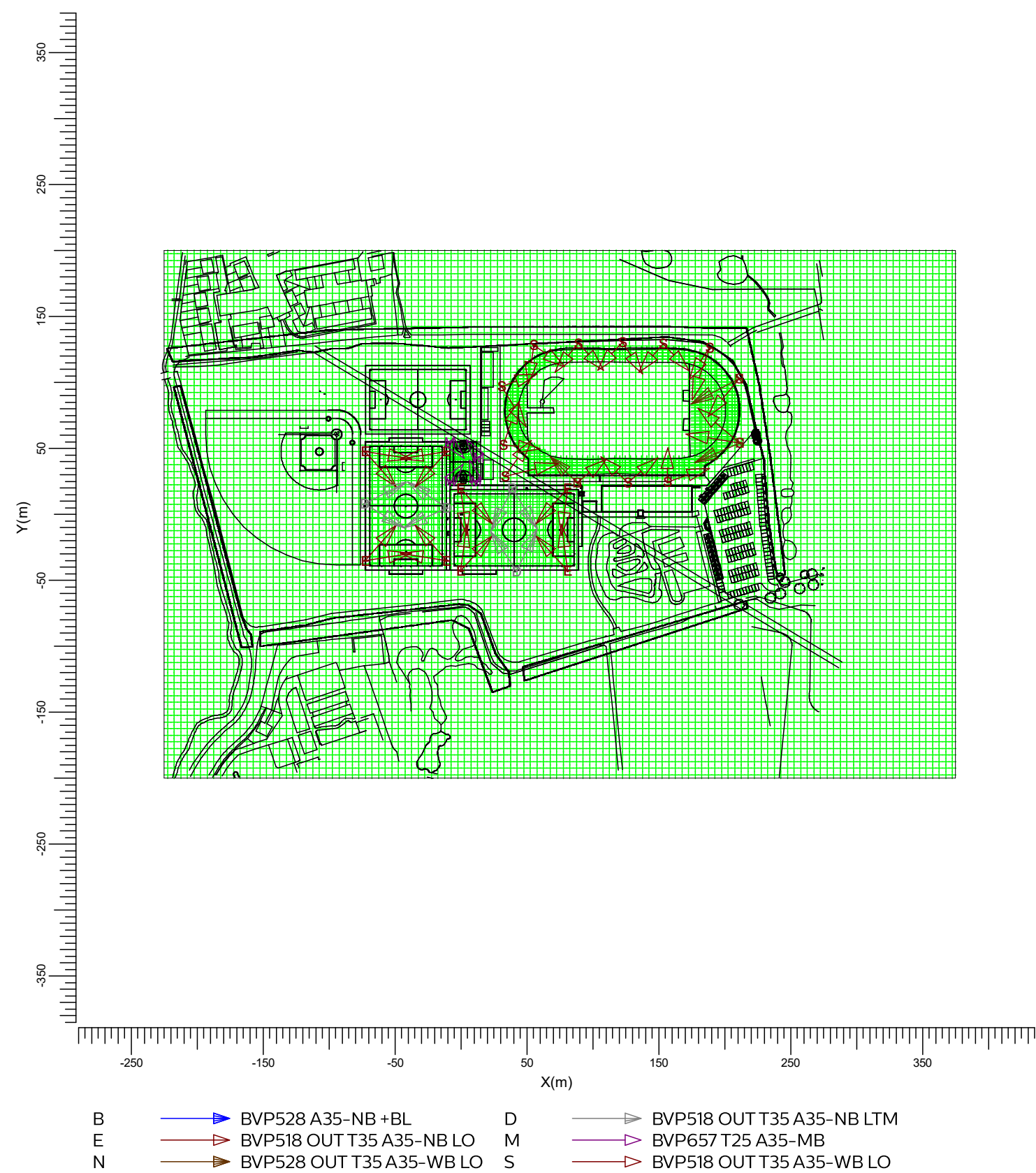
1. Project Description

1.1 3-D Project Overview



- | | | | | | |
|---|--|--------------------------|---|--|---------------------------|
| B | | BVP528 A35-NB +BL | D | | BVP518 OUT T35 A35-NB LTM |
| E | | BVP518 OUT T35 A35-NB LO | M | | BVP657 T25 A35-MB |
| N | | BVP528 OUT T35 A35-WB LO | S | | BVP518 OUT T35 A35-WB LO |

1.2 Top Project Overview



Scale
1:4000

2. Summary

2.1 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
D	8	BVP518 OUT T35 A35-NB LTM	1 * LED1720-4S/740	1006.0	1 * 172000
E	16	BVP518 OUT T35 A35-NB LO	1 * LED1720-4S/740	1006.0	1 * 172000
M	4	BVP657 T25 A35-MB	1 * LED450-4S	248.5	1 * 45000
N	3	BVP528 OUT T35 A35-WB LO	1 * LED2590-4S/757	1505.9	1 * 259000
S	24	BVP518 OUT T35 A35-WB LO	1 * LED1720-4S/757	1006.0	1 * 172000

The total installed power: 53.80 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code					Power (kWatt)
	D	E	M	N	S	
North Football 200lux	4	8	0	0	0	12.07
North Football 120lux	4	8	0	0	0	12.07
South Football 200lux	4	8	0	0	0	12.07
South Football 120lux	4	8	0	0	0	12.07
MUGA 120lux	0	0	4	0	0	0.99
Athletics	0	0	0	3	24	28.66
Spillage Switching	8	16	4	3	24	53.80

Number of Luminaires Per Arrangement:

Arrangement	Luminaire Code					Power (kWatt)
	D	E	M	N	S	
MUGA Mast2	0	0	1	0	0	0.25
MUGA Mast3	0	0	1	0	0	0.25
MUGA Mast4	0	0	1	0	0	0.25
MUGA Mast5	0	0	1	0	0	0.25
North Centre Mast1	2	0	0	0	0	2.01
North Centre Mast2	2	0	0	0	0	2.01
North End Mast1	0	8	0	0	0	8.05
South Centre Mast1	2	0	0	0	0	2.01
South Centre Mast2	2	0	0	0	0	2.01
South End Mast1	0	8	0	0	0	8.05
Individuals	0	0	0	3	24	28.66

2.2 Calculation Results

Switching Modes:

Code	Switching Mode	Maintenance factor
1	North Football 200lux	0.95
2	North Football 120lux	0.60
3	South Football 200lux	0.95
4	South Football 120lux	0.60
5	MUGA 120lux	0.95
6	Athletics	0.95
7	Spillage Switching	1.00

(II)luminance Calculations:

Calculation	Switching Mode	Type	Unit	Ave Min/AveMin/Max		
North Football 200 Lux	1	Surface Illuminance	lux	208	0.65	0.48
North Football 120 Lux	2	Surface Illuminance	lux	131	0.65	0.48
South Football 200 Lux	3	Surface Illuminance	lux	204	0.65	0.47
South Football 120 Lux	4	Surface Illuminance	lux	129	0.65	0.47
MUGA 120 Lux	5	Surface Illuminance	lux	143	0.62	0.36
Atheltics Track Only	6	Surface Illuminance	lux	204	0.64	0.42
Atheltics Full Track	6	Surface Illuminance	lux	201	0.65	0.42
Ground Spillage	7	Surface Illuminance	lux	25.6	0.00	0.00
Horizontal Spill @ 3.0m	7	Horizontal Illuminance	lux			

Glare Rating for Grid of Observers:

Calculation	Switching Mode	Observer Grid	Reference Grid	Reflectance	GR-Max
North Football Glare	7	North Football	North Football	0.25	48.6
South Football Glare	7	South Football	South Football	0.25	48.4

Obtrusive Light Calculations:

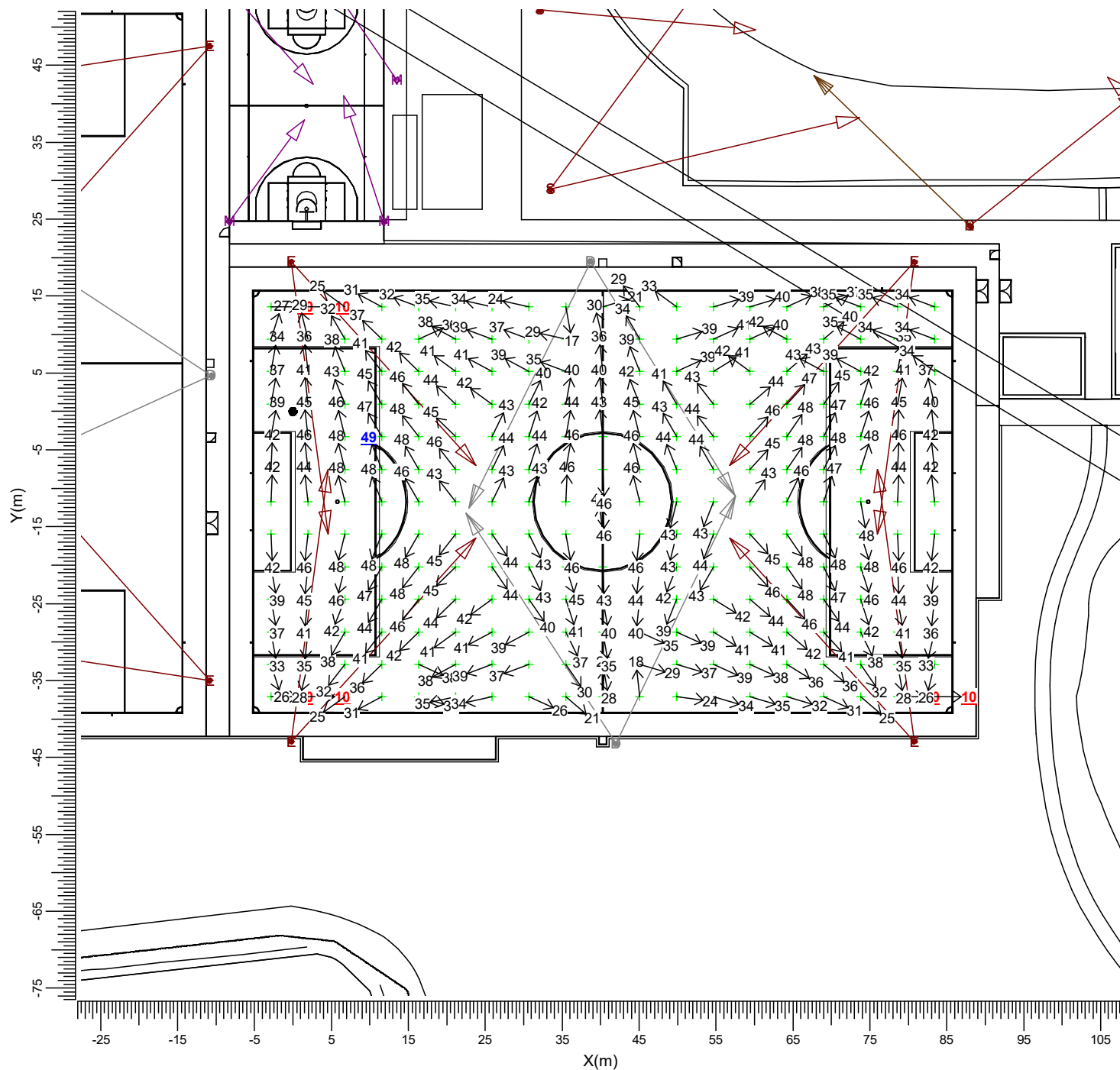
Switching Mode	ULR
1	0.00
2	0.00
3	0.00
4	0.00
5	0.01
6	0.00
7	0.00

North Football 120lux

3.3 North Football Glare: Graphical Table

Spillage Switching

Grid of Observers : North Football
Calculation : Glare Rating
Grid for Background Luminance: North Football (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



B	▶ BVP528 A35-NB +BL	D	▶ BVP518 OUT T35 A35-NB LTM
E	▶ BVP518 OUT T35 A35-NB LO	M	▶ BVP657 T25 A35-MB
N	▶ BVP528 OUT T35 A35-WB LO	S	▶ BVP518 OUT T35 A35-WB LO

Project maintenance factor
1.00

Scale
1:750

3.4 South Football 200 Lux: Graphical Table

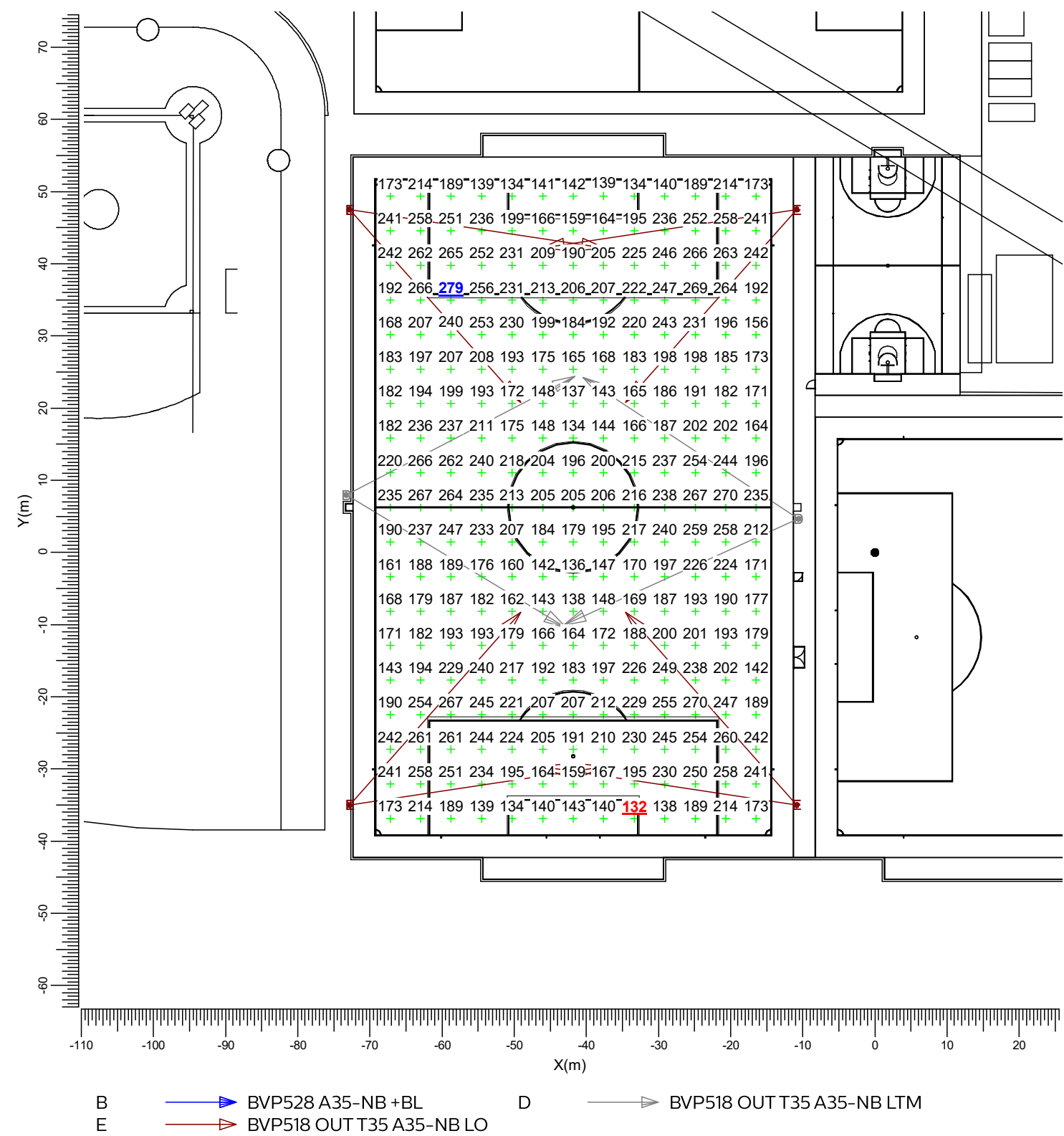
South Football 200lux

Grid

Calculation

: South Football at Z = -0.00 m

: Surface Illuminance (lux)



3.5 South Football 120 Lux: Graphical Table

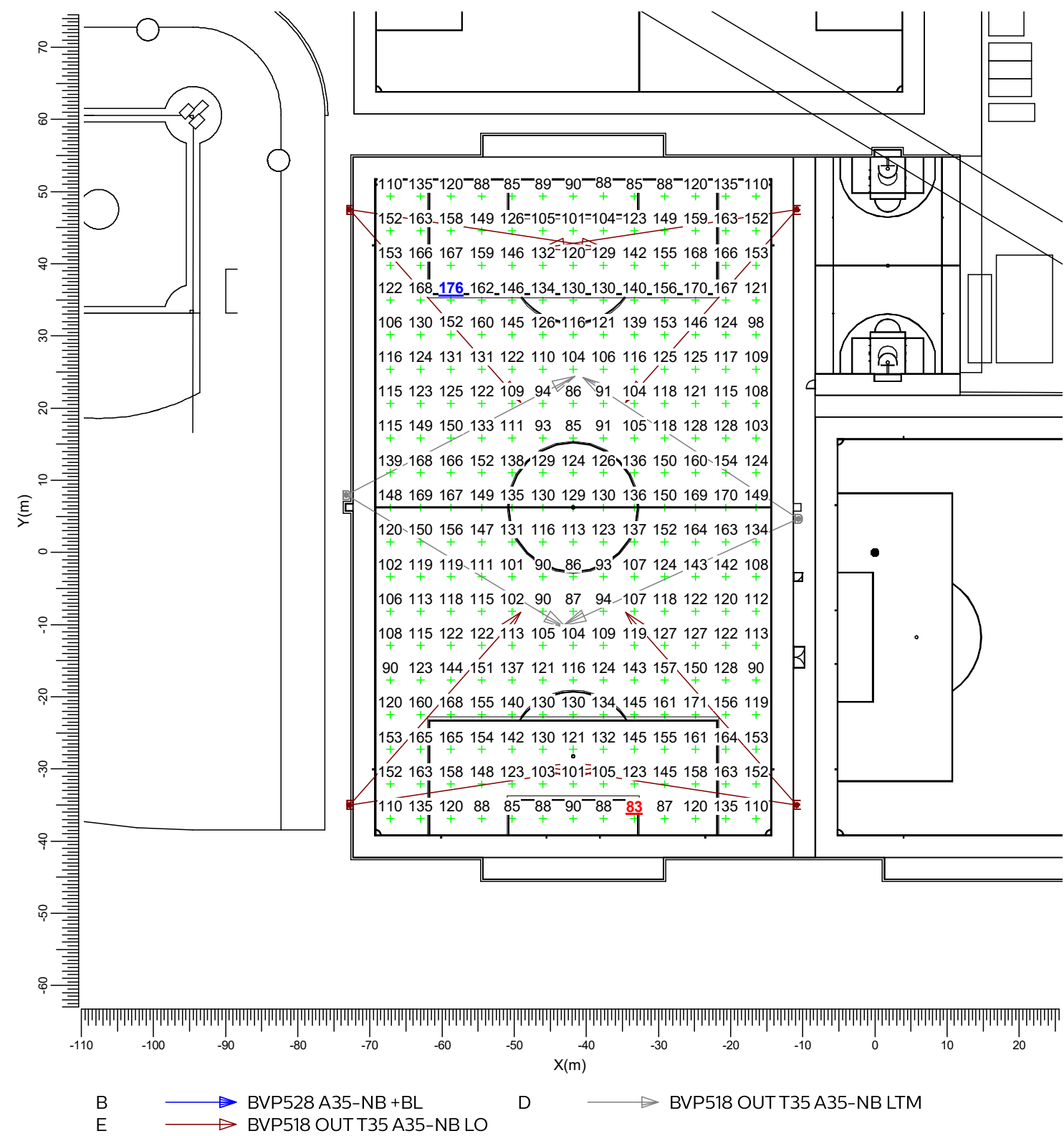
South Football 120lux

Grid

Calculation

: South Football at Z = -0.00 m

: Surface Illuminance (lux)



Average
129

Min/Ave
0.65

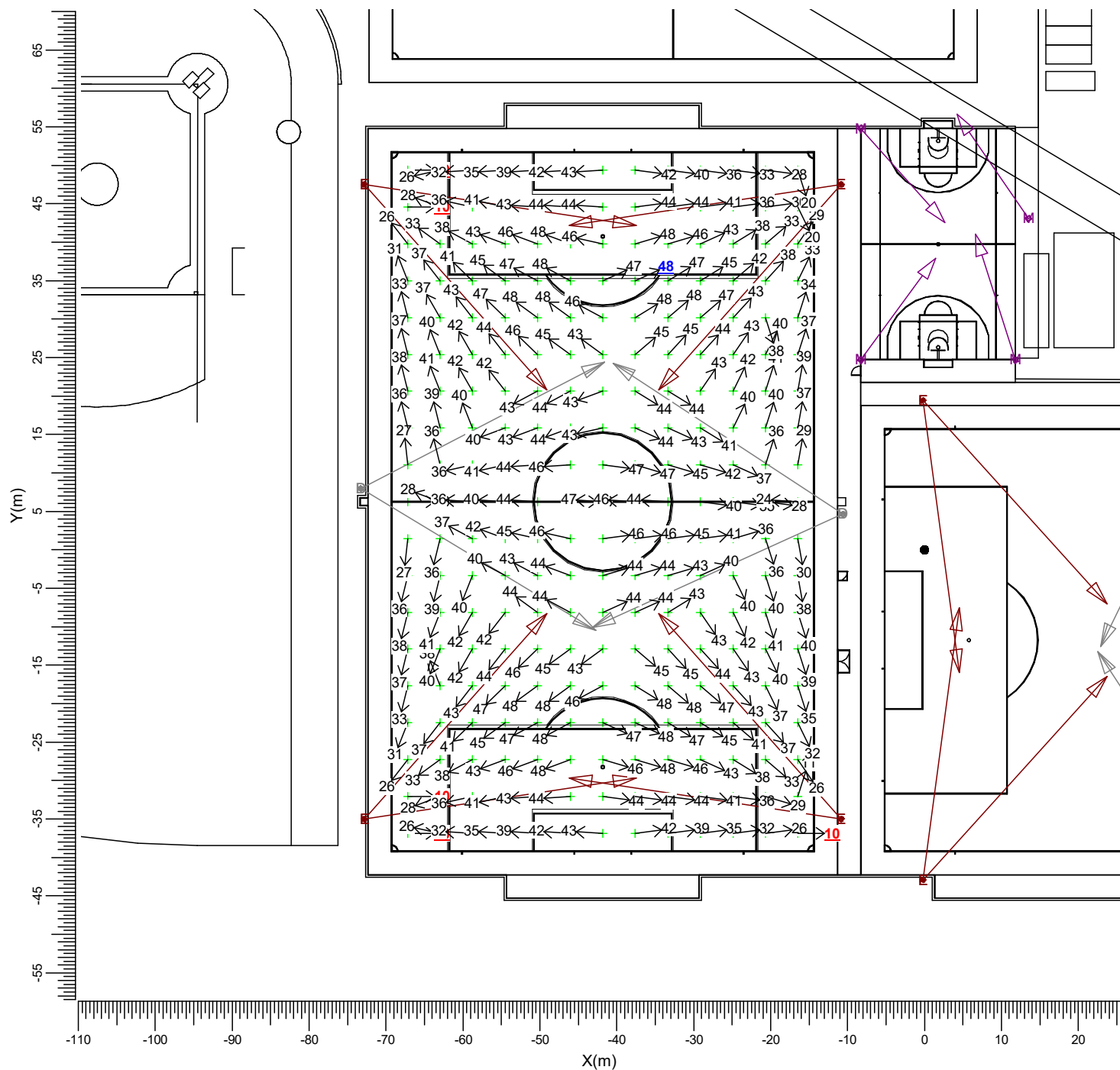
Min/Max
0.47

Project maintenance factor
0.60

Scale
1:750

Spillage Switching

Grid of Observers : South Football
Calculation : Glare Rating
Grid for Background Luminance: South Football (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



- | | | | | | |
|---|---|--------------------------|---|---|---------------------------|
| B | | BVP528 A35-NB +BL | D | | BVP518 OUT T35 A35-NB LTM |
| E | | BVP518 OUT T35 A35-NB LO | M | | BVP657 T25 A35-MB |
| N | | BVP528 OUT T35 A35-WB LO | S | | BVP518 OUT T35 A35-WB LO |

Project maintenance factor
1.00

Scale
1:750

MUGA 120lux

The figure is a 2D floor plan of a building, overlaid with a grid of numbered points. The grid consists of 10 columns and 10 rows of points, each labeled with a number. The numbers are color-coded: green for most points, red for '89', and blue for '245'. The plan includes two central circular features, possibly fountains or pools, and several rectangular rooms. The plan is overlaid with a coordinate system with X and Y axes ranging from -16 to 19 and 22 to 57 respectively. Purple arrows indicate specific paths or directions between points.

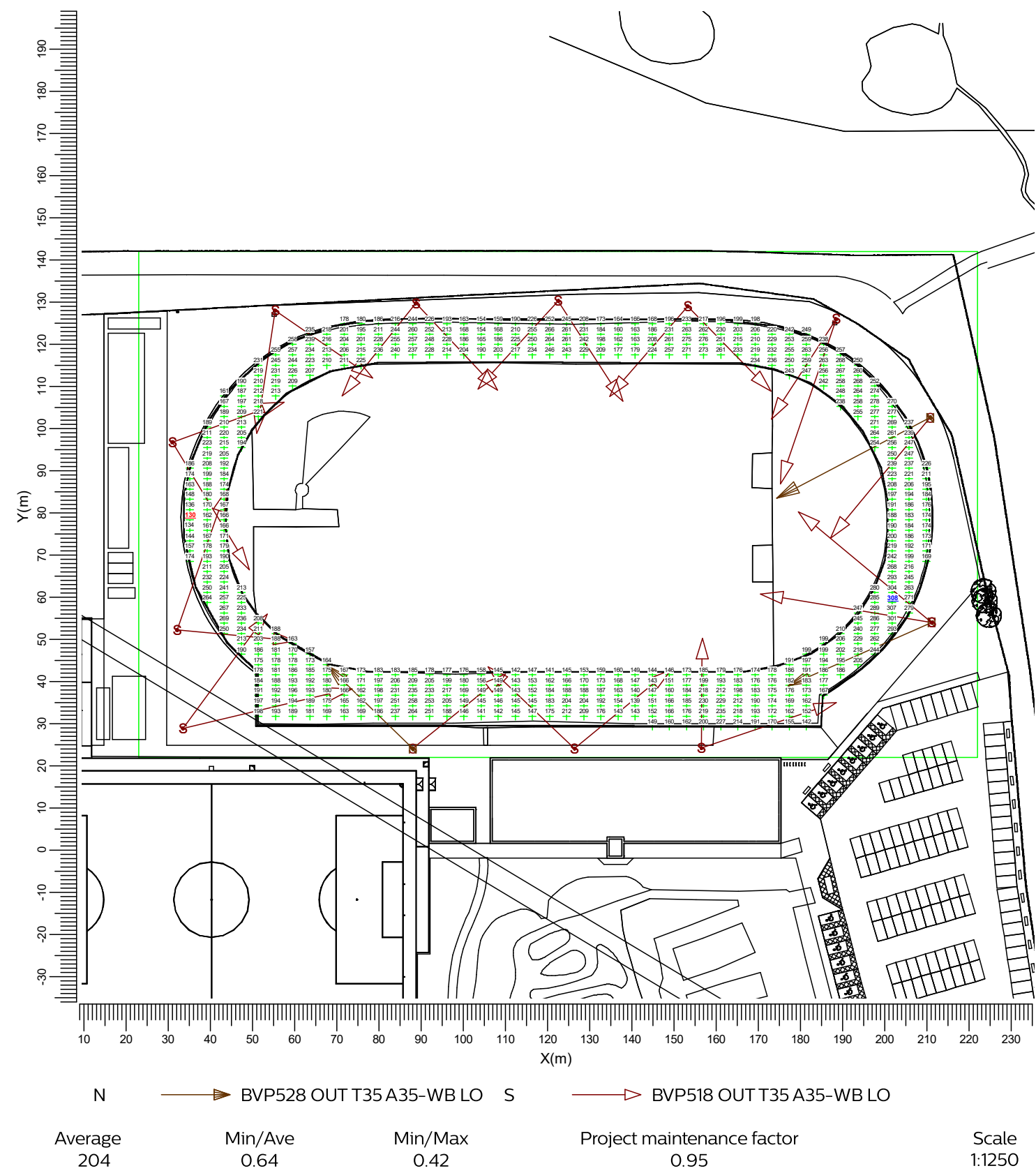
Average	Min/Ave	Min/Max	Project maintenance factor	Scale
143	0.62	0.36	0.95	1:200

3.8 Athletics Track Only: Graphical Table

Athletics

Grid : Athletics Track Only at Z = -0.00 m

Calculation : Surface Illuminance (lux)



3.9 Athletics Track Only: Filled Iso Contour

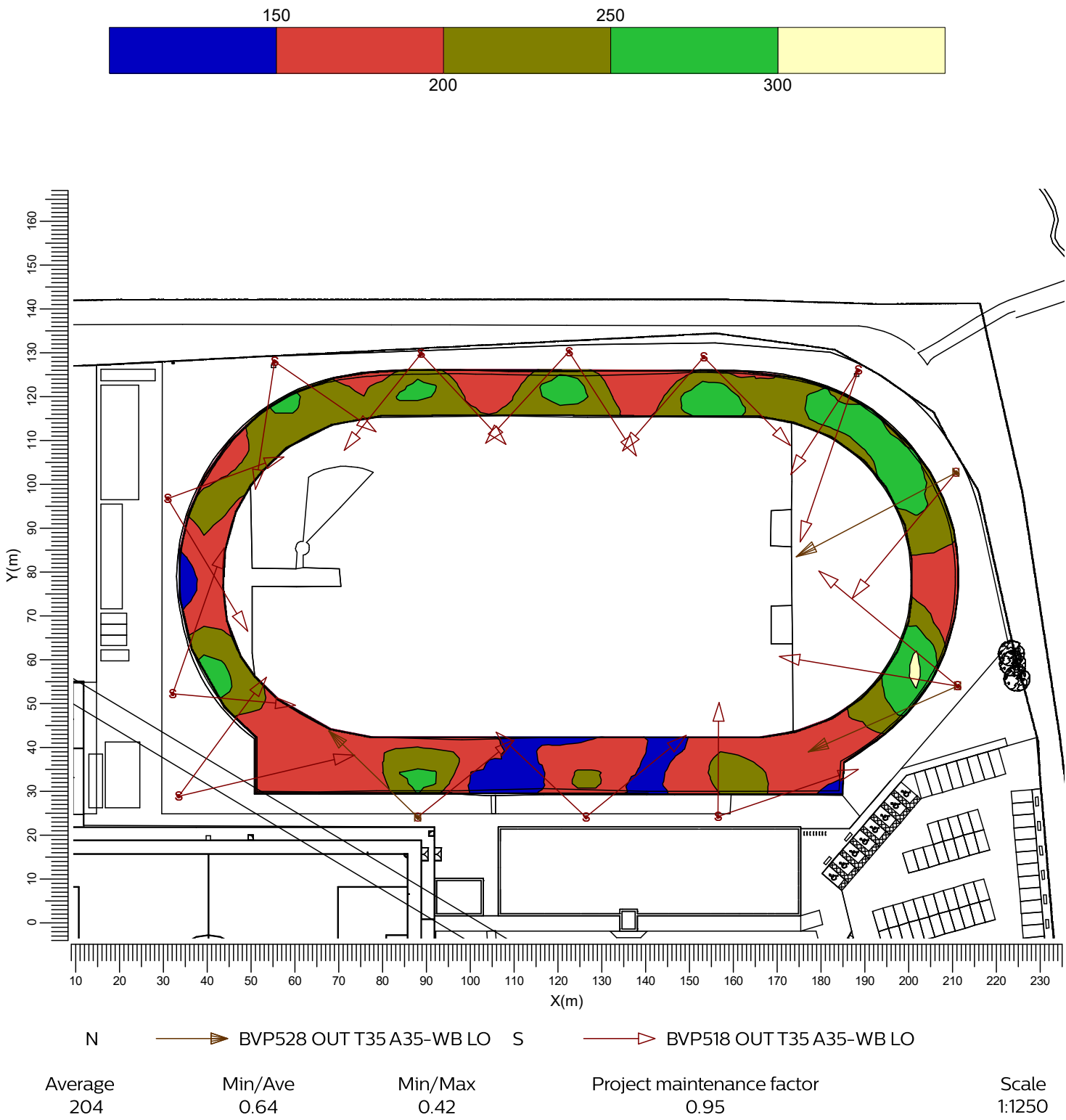
Athletics

Grid

Calculation

: Athletics Track Only at Z = -0.00 m

: Surface Illuminance (lux)

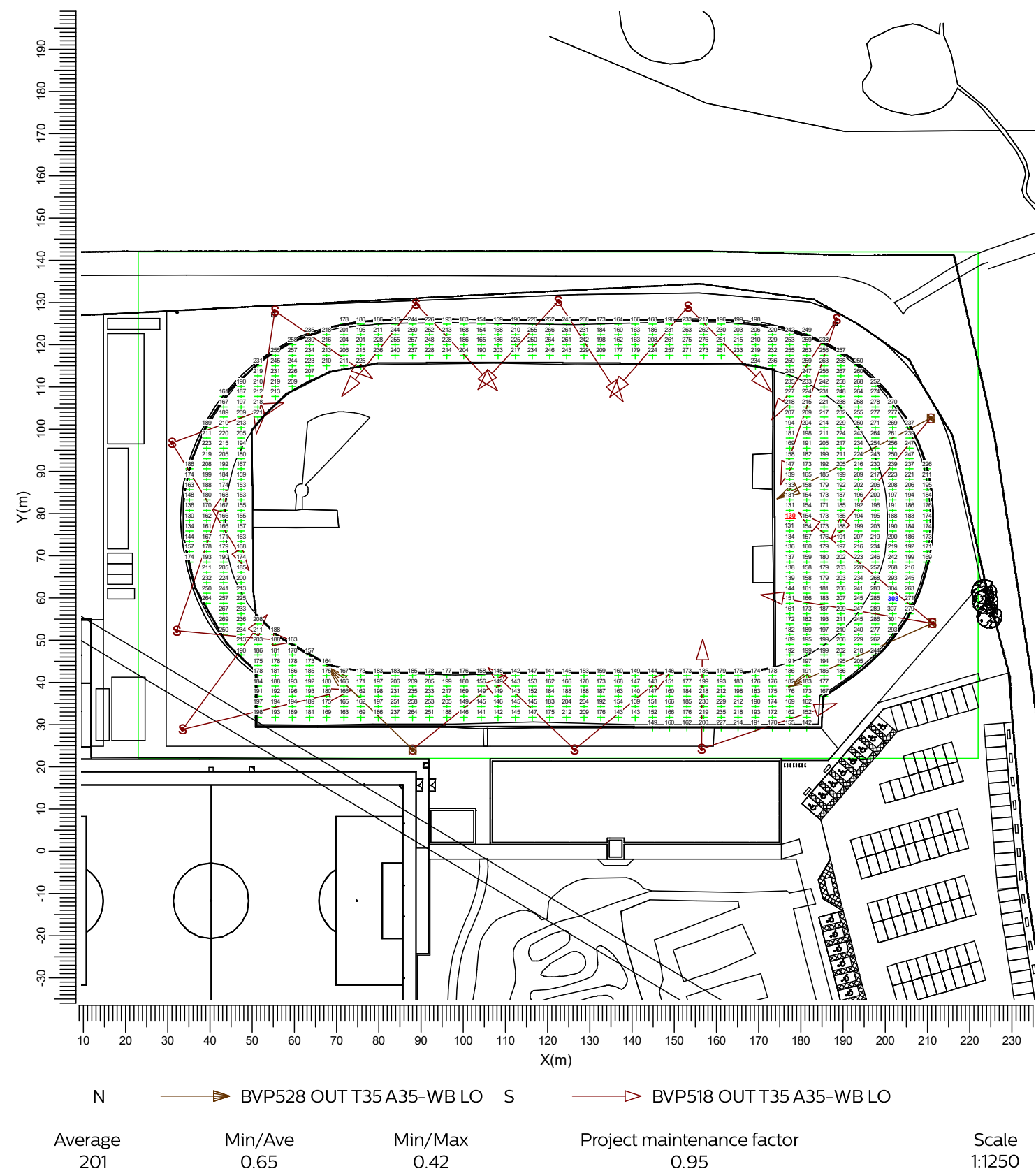


3.10 Atheltics Full Track: Graphical Table

Athletics

Grid : Atheltics at Z = -0.00 m

Calculation : Surface Illuminance (lux)

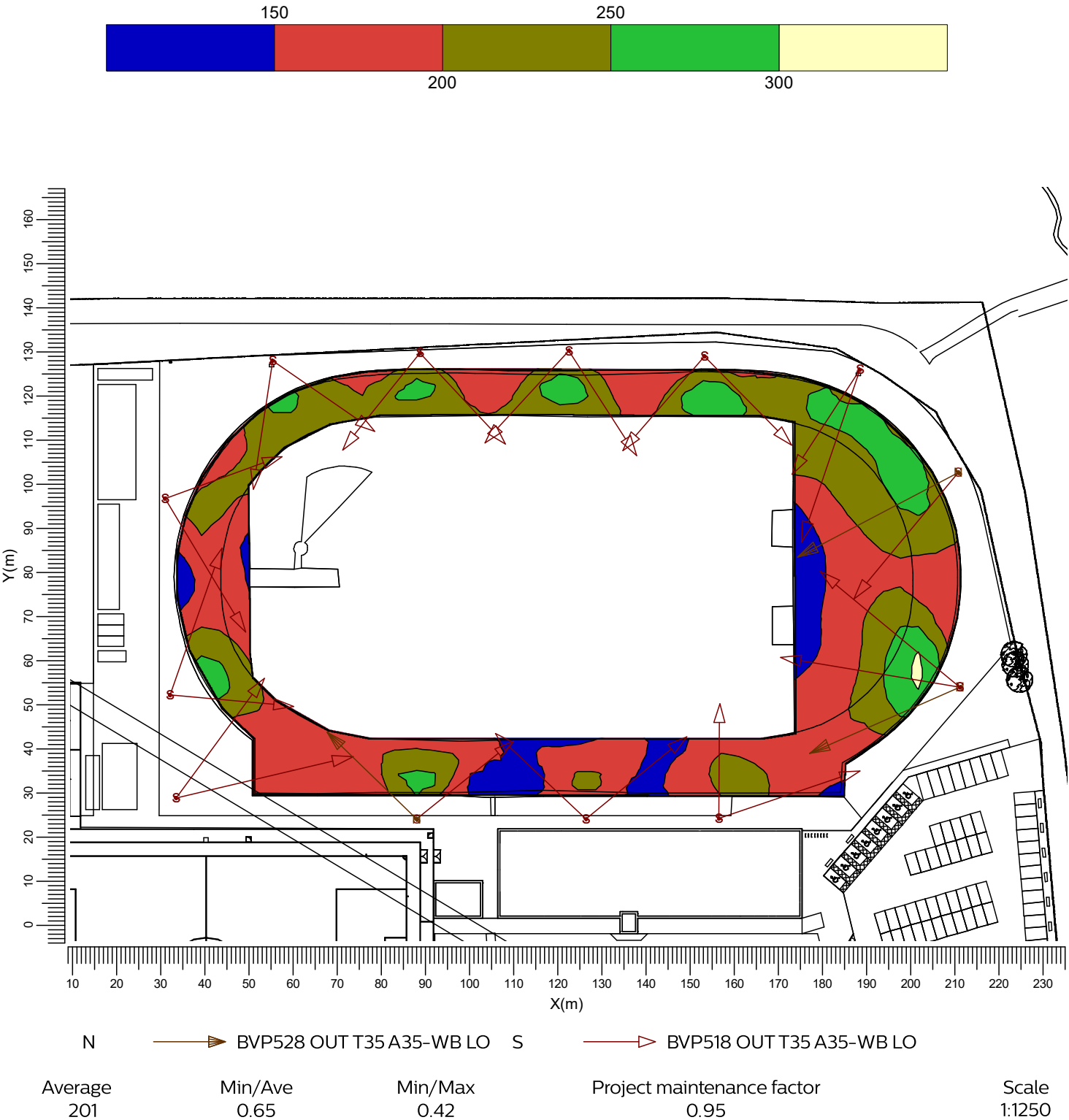


3.11 Atheltics Full Track: Filled Iso Contour

Athletics

Grid : Athletics at Z = -0.00 m

Calculation : Surface Illuminance (lux)



3.12 Ground Spillage: Filled Iso Contour

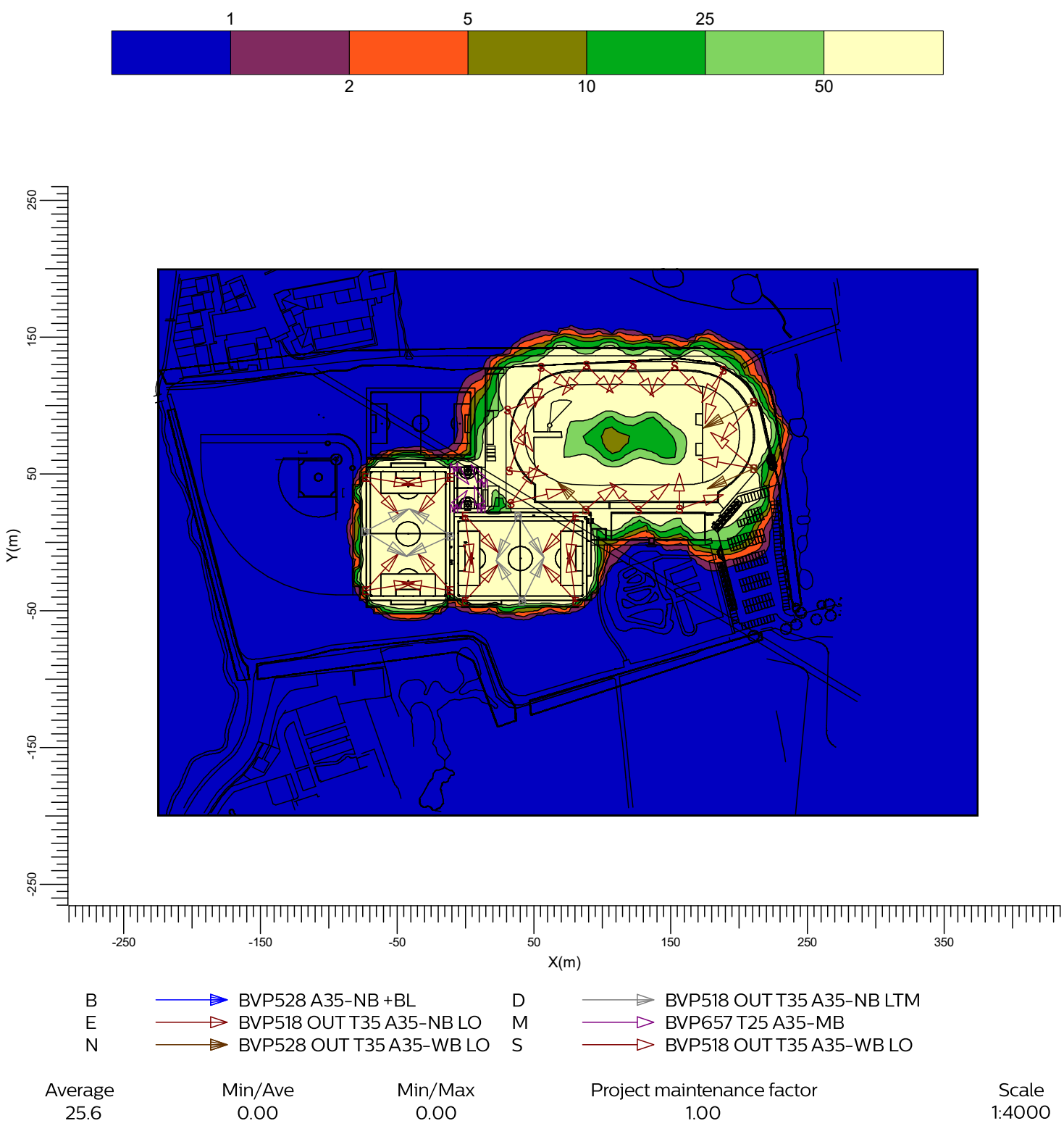
Spillage Switching

Grid

Calculation

: Spillage Grid at Z = -0.00 m

: Surface Illuminance (lux)



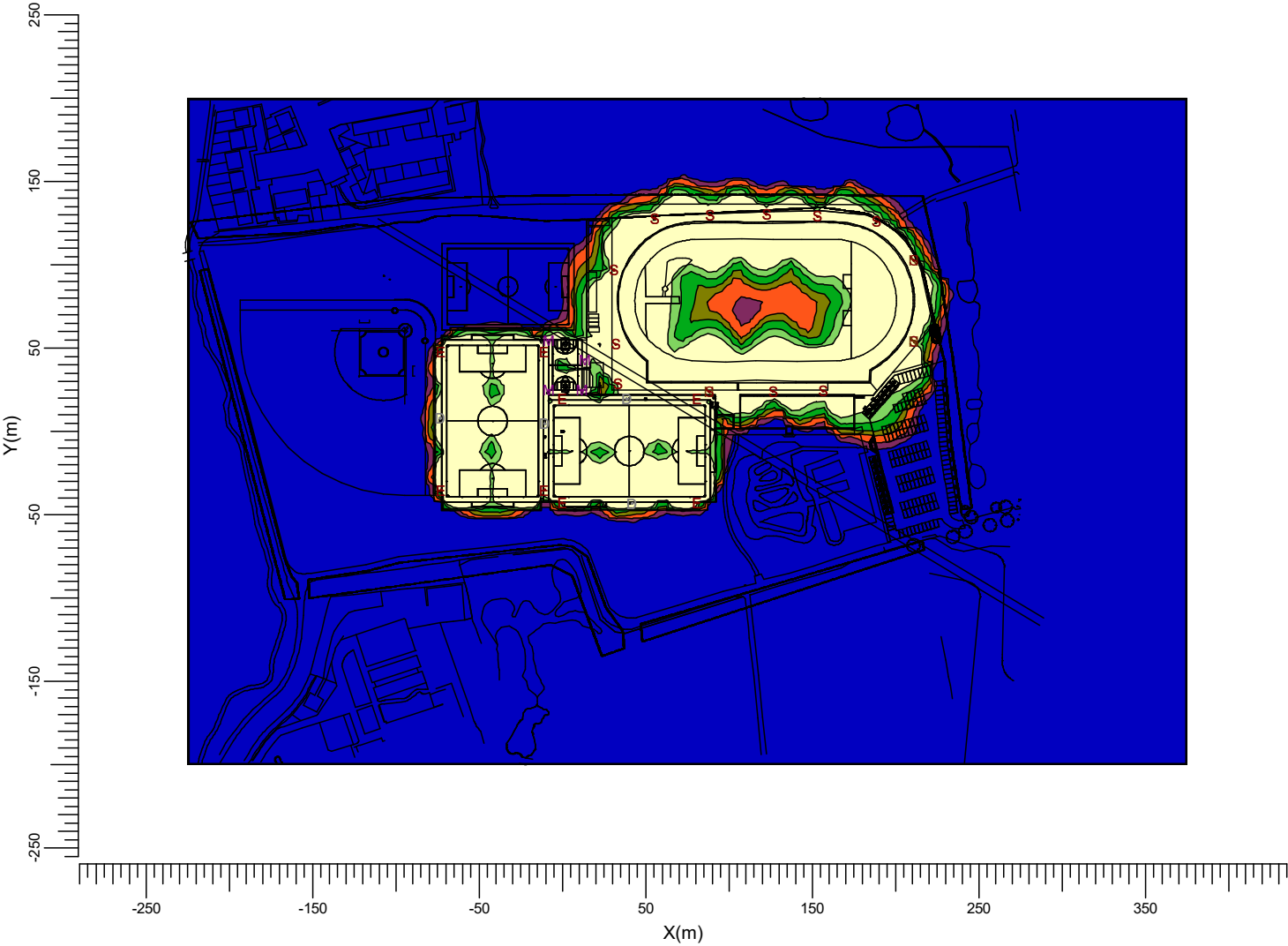
3.13 Horizontal Spill @ 3.0m: Filled Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m

Calculation : Horizontal Illuminance (lux)

Height above grid : 3.00 m



- B :

BVP528 A35-NB +BL
- E :

BVP518 OUT T35 A35-NB LO
- N :

BVP528 OUT T35 A35-WB LO
- D :

BVP518 OUT T35 A35-NB LTM
- M :

BVP657 T25 A35-MB
- S :

BVP518 OUT T35 A35-WB LO

Project maintenance factor
1.00

Scale
1:4000

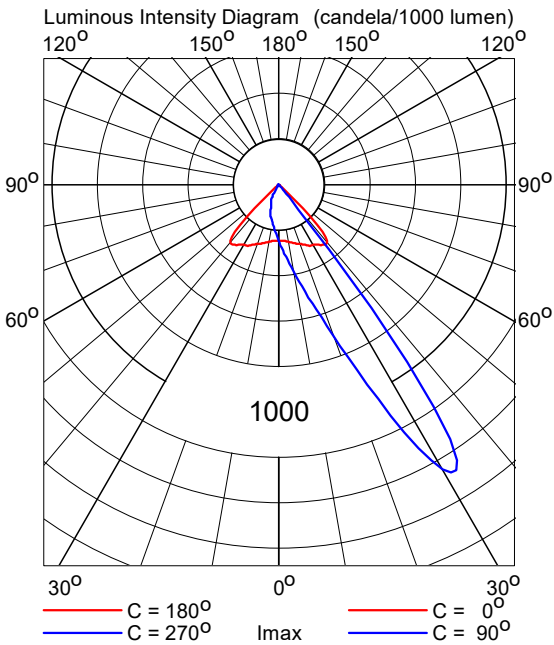
4. Luminaire Details

4.1 Project Luminaires

OptiVision LED gen3.5 2022
BVP518 OUT T35 1xLED1720-4S/740/740 E3/D4I A35-NB LTM

Light output ratios	
DLOR	: 0.71
ULOR	: 0.00
TLOR	: 0.71
Ballast	: E3/D4I
Lamp flux	: 172000 lm
Luminaire wattage	: 1006.0 W
Measurement code	: LVM2047600

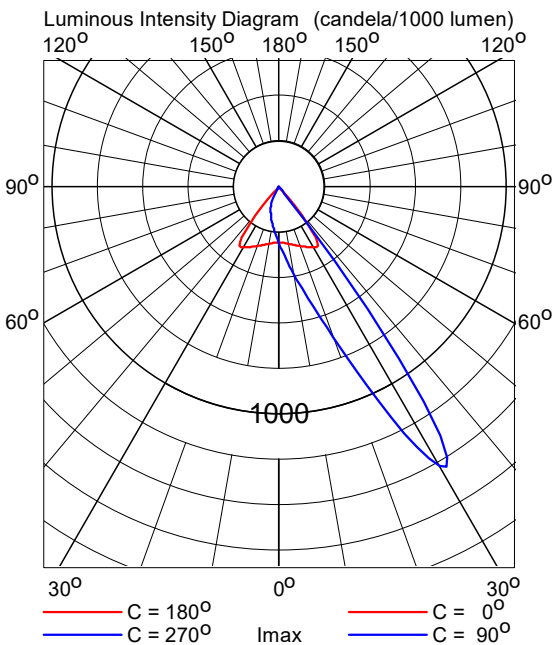
Note: Luminaire data not from database.



OptiVision LED gen3.5 2022
BVP518 OUT T35 1xLED1720-4S/740/740 E3/D4I A35-NB LO

Light output ratios	
DLOR	: 0.59
ULOR	: 0.00
TLOR	: 0.59
Ballast	: E3/D4I
Lamp flux	: 172000 lm
Luminaire wattage	: 1006.0 W
Measurement code	: LVM2047300

Note: Luminaire data not from database.

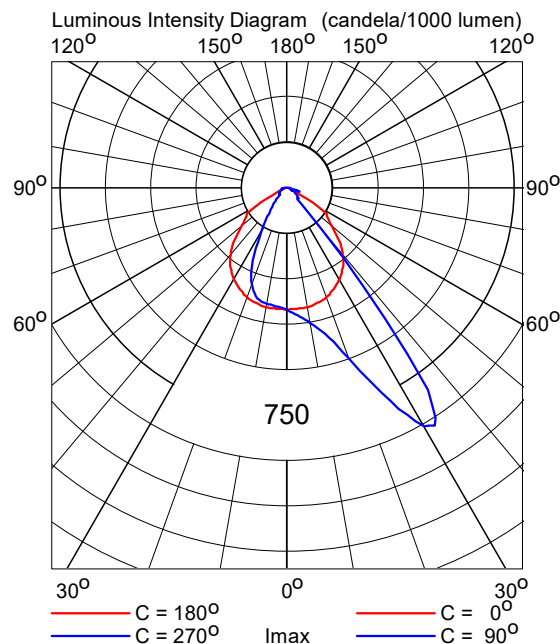


ClearFlood gen2
BVP657 T25 1xLED450-4S/740 FP A35-MB

Light output ratios

DLOR	: 0.90
ULOR	: 0.00
TLOR	: 0.90
Ballast	: FP
Lamp flux	: 45000 lm
Luminaire wattage	: 248.5 W
Measurement code	: LVA2405014

Note: Luminaire data not from database.

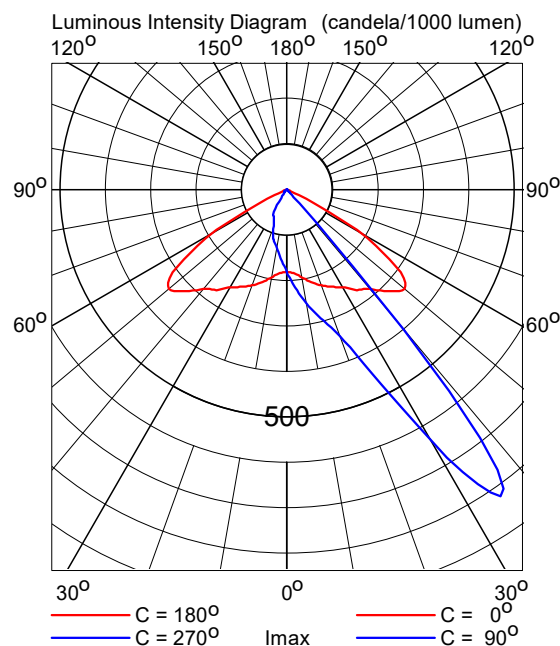


OptiVision LED gen3.5 2022
BVP528 OUT T35 1xLED2590-4S/757/757 E3/D4I A35-WB LO

Light output ratios

DLOR	: 0.70
ULOR	: 0.00
TLOR	: 0.70
Ballast	: E3/D4I
Lamp flux	: 259000 lm
Luminaire wattage	: 1505.9 W
Measurement code	: LVM2049200

Note: Luminaire data not from database.

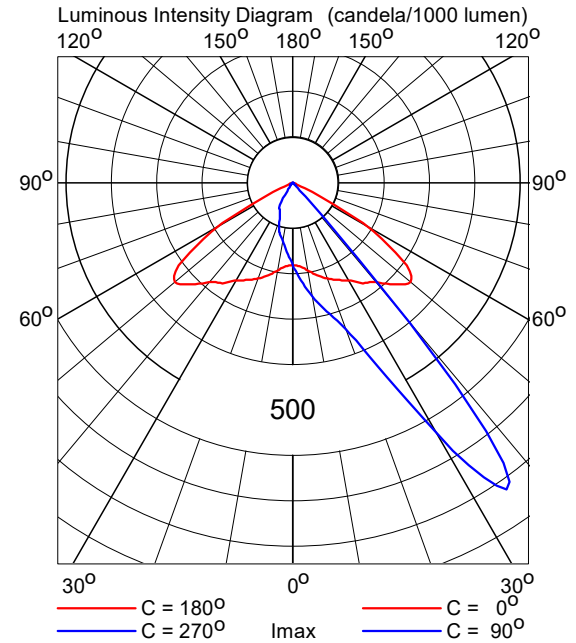


OptiVision LED gen3.5 2022
BVP518 OUT T35 1xLED1720-4S/757/757 E3/D4I A35-WB LO

Light output ratios

DLOR	: 0.70
ULOR	: 0.00
TLOR	: 0.70
Ballast	: E3/D4I
Lamp flux	: 172000 lm
Luminaire wattage	: 1006.0 W
Measurement code	: LVM2049200

Note: Luminaire data not from database.



5. Installation Data

5.1 Legends

Project Luminaires:

Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
D	8	BVP518 OUT T35 A35-NB LTM	1 * LED1720-4S/740	1 * 172000
E	16	BVP518 OUT T35 A35-NB LO	1 * LED1720-4S/740	1 * 172000
M	4	BVP657 T25 A35-MB	1 * LED450-4S	1 * 45000
N	3	BVP528 OUT T35 A35-WB LO	1 * LED2590-4S/757	1 * 259000
S	24	BVP518 OUT T35 A35-WB LO	1 * LED1720-4S/757	1 * 172000

Switching Modes:

Code	Switching Mode
1	North Football 200lux
2	North Football 120lux
3	South Football 200lux
4	South Football 120lux
5	MUGA 120lux
6	Athletics
7	Spillage Switching

5.2 Luminaire Positioning and Orientation

Qty and Code	Position			Aiming Angles			Switching Modes						
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	1	2	3	4	5	6	7
1 * D	-73.27	7.97	13.00	-31.1	70.0	0.0	-	-	+	+	-	-	+
1 * D	-73.27	7.97	13.00	27.4	70.0	0.0	-	-	+	+	-	-	+
1 * E	-72.83	-35.00	13.00	8.6	70.0	0.0	-	-	+	+	-	-	+
1 * E	-72.83	-35.00	13.00	48.4	70.0	0.0	-	-	+	+	-	-	+
1 * E	-72.83	47.52	13.00	-8.6	70.0	-0.0	-	-	+	+	-	-	+
1 * E	-72.83	47.52	13.00	-48.4	70.0	-0.0	-	-	+	+	-	-	+
1 * E	-10.83	-35.00	13.00	171.4	70.0	-0.0	-	-	+	+	-	-	+
1 * E	-10.83	-35.00	13.00	131.6	70.0	-0.0	-	-	+	+	-	-	+
1 * E	-10.83	47.52	13.00	-171.4	70.0	0.0	-	-	+	+	-	-	+
1 * E	-10.83	47.52	13.00	-131.6	70.0	0.0	-	-	+	+	-	-	+
1 * D	-10.63	4.66	13.00	-155.6	70.0	0.0	-	-	+	+	-	-	+
1 * D	-10.63	4.66	13.00	146.8	70.0	0.0	-	-	+	+	-	-	+
1 * M	-8.28	24.71	8.00	53.5	64.0	0.0	-	-	-	-	+	-	+
1 * M	-8.28	54.81	8.00	-48.4	64.0	0.0	-	-	-	-	+	-	+
1 * E	-0.24	-42.91	13.00	82.3	70.0	0.0	+	+	-	-	-	-	+
1 * E	-0.24	-42.91	13.00	47.8	70.0	0.0	+	+	-	-	-	-	+
1 * E	-0.24	19.43	13.00	-82.3	70.0	-0.0	+	+	-	-	-	-	+
1 * E	-0.24	19.43	13.00	-47.8	70.0	-0.0	+	+	-	-	-	-	+
1 * M	11.82	24.71	8.00	107.6	65.0	0.0	-	-	-	-	+	-	+
1 * M	13.50	43.11	8.00	124.4	64.0	0.0	-	-	-	-	+	-	+
1 * S	30.95	96.77	15.00	19.7	62.0	0.0	-	-	-	-	-	+	+
1 * S	30.95	96.77	15.00	-58.9	67.0	0.0	-	-	-	-	-	+	+

Qty and Code	Position			Aiming Angles			Switching Modes						
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	1	2	3	4	5	6	7
1 * S	32.07	52.21	15.00	-5.4	62.0	0.0	-	-	-	-	-	+	+
1 * S	32.07	52.21	15.00	70.5	67.0	0.0	-	-	-	-	-	+	+
1 * S	33.44	28.88	15.00	53.6	66.0	0.0	-	-	-	-	-	+	+
1 * S	33.46	28.91	15.00	13.0	70.0	0.0	-	-	-	-	-	+	+
1 * D	38.67	19.47	13.00	-116.3	70.0	0.0	+	+	-	-	-	-	+
1 * D	38.67	19.47	13.00	-58.2	70.0	0.0	+	+	-	-	-	-	+
1 * D	41.98	-43.17	13.00	123.0	70.0	0.0	+	+	-	-	-	-	+
1 * D	41.98	-43.17	13.00	64.2	70.0	0.0	+	+	-	-	-	-	+
1 * S	55.33	128.00	15.00	-34.6	62.0	0.0	-	-	-	-	-	+	+
1 * S	55.33	128.00	15.00	-98.5	63.0	0.0	-	-	-	-	-	+	+
1 * E	80.78	-42.91	13.00	97.7	70.0	-0.0	+	+	-	-	-	-	+
1 * E	80.78	-42.91	13.00	132.2	70.0	-0.0	+	+	-	-	-	-	+
1 * E	80.78	19.43	13.00	-97.7	70.0	0.0	+	+	-	-	-	-	+
1 * E	80.78	19.43	13.00	-132.2	70.0	0.0	+	+	-	-	-	-	+
1 * N	88.00	24.09	15.00	136.0	62.0	0.0	-	-	-	-	-	+	+
1 * S	88.00	24.09	15.00	38.7	62.0	0.0	-	-	-	-	-	+	+
1 * S	88.79	129.76	15.00	-46.9	62.0	0.0	-	-	-	-	-	+	+
1 * S	88.79	129.76	15.00	-128.6	62.0	0.0	-	-	-	-	-	+	+
1 * S	122.55	130.26	15.00	-57.2	62.0	0.0	-	-	-	-	-	+	+
1 * S	122.55	130.26	15.00	-132.3	62.0	0.0	-	-	-	-	-	+	+
1 * S	126.40	24.09	15.00	136.6	62.0	0.0	-	-	-	-	-	+	+
1 * S	126.40	24.09	15.00	39.2	63.0	0.0	-	-	-	-	-	+	+
1 * S	153.19	129.01	15.00	-45.4	62.0	0.0	-	-	-	-	-	+	+
1 * S	153.19	129.01	15.00	-130.7	62.0	0.0	-	-	-	-	-	+	+
1 * S	156.51	24.23	15.00	89.4	60.0	0.0	-	-	-	-	-	+	+
1 * S	156.51	24.23	15.00	18.5	66.0	0.0	-	-	-	-	-	+	+
1 * S	188.47	125.96	15.00	-108.7	70.0	0.0	-	-	-	-	-	+	+
1 * S	188.47	125.96	15.00	-122.9	62.0	0.0	-	-	-	-	-	+	+
1 * N	210.80	102.62	15.00	-152.3	70.0	0.0	-	-	-	-	-	+	+
1 * S	210.80	102.62	15.00	-129.6	68.0	0.0	-	-	-	-	-	+	+
1 * S	211.18	53.96	15.00	170.6	70.0	0.0	-	-	-	-	-	+	+
1 * S	211.18	53.96	15.00	140.3	70.0	0.0	-	-	-	-	-	+	+
1 * N	211.18	53.96	15.00	-156.3	68.0	0.0	-	-	-	-	-	+	+