

Doric Park

Rugby Artificial Turf Pitch

Project code: LSUK005
Date: 14-11-2019

Designer: Wesley Bugg

Description: Match play:
Maintained average illuminance >200 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

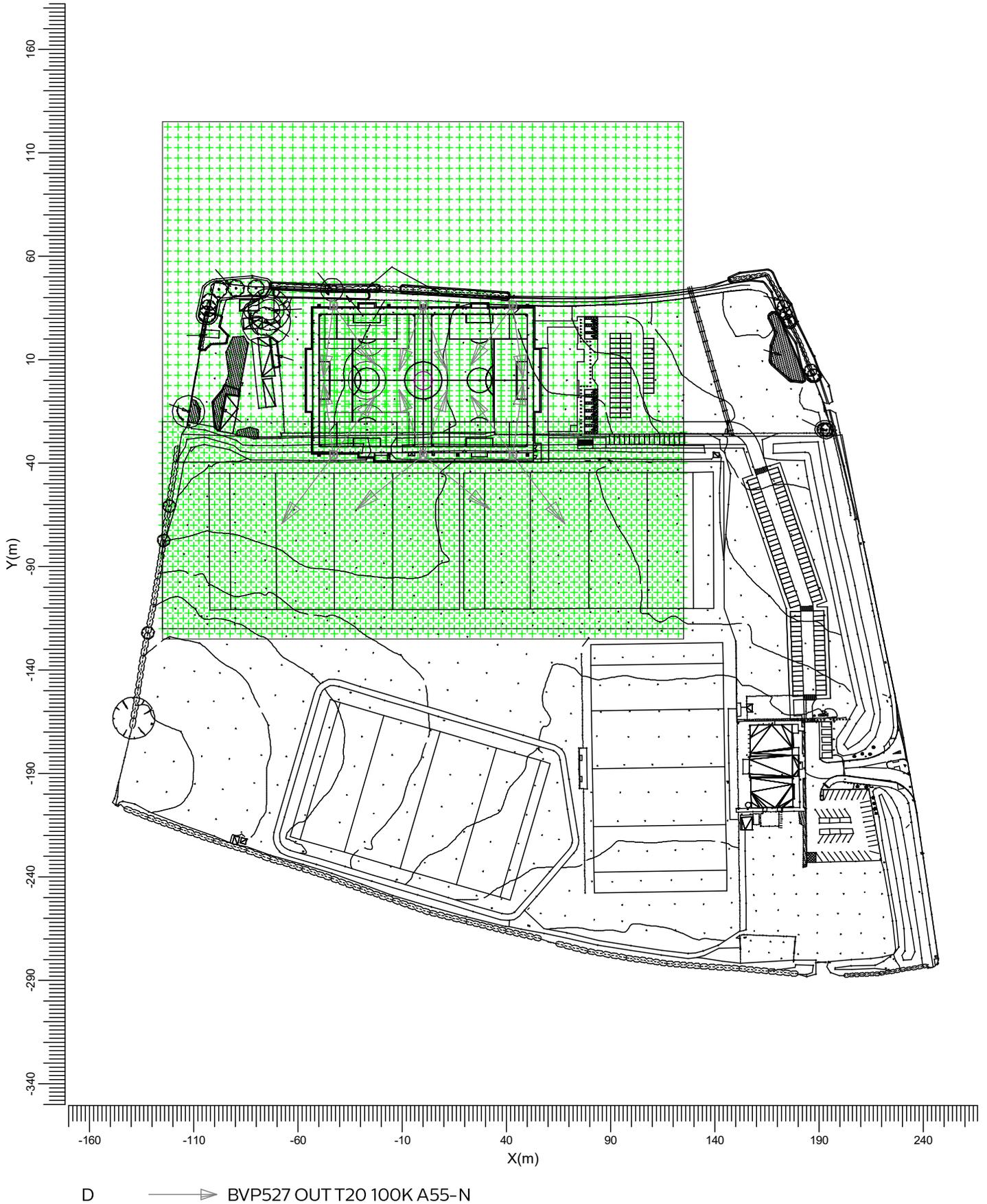
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1. Project Description

1.1 Top Project Overview



Scale
1:2500

2. Summary

2.1 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
D	16	BVP527 OUT T20 100K A55-NB	1 * LED2120/757	1500.0	1 * 212481

The total installed power: 24.00 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code	Power (kWatt)
	D	
200lux Switching	12	18.00
Half Pitch Switching	6	9.00
50%lux Switching	12	18.00
Over Spillage Switching	4	6.00
Spillage Switching	16	24.00

Number of Luminaires Per Arrangement:

Arrangement	Luminaire Code	Power (kWatt)
	D	
Backlights	2	3.00
Backlights Corners	2	3.00
Mast	2	3.00
Mast Corner 2	4	6.00

2.2 Calculation Results

Switching Modes:

Code	Switching Mode	Maintenance factor
1	200lux Switching	0.95
2	Half Pitch Switching	0.95
3	50%lux Switching	0.47
4	Over Spillage Switching	0.95
5	Spillage Switching	1.00

(II)luminance Calculations:

Calculation	Switching Mode	Type	Unit	Ave Min/AveMin/Max	
Football	1	Surface Illuminance	lux	0.69	0.41
Football 50%	3	Surface Illuminance	lux	0.69	0.41
Half Pitch	2	Surface Illuminance	lux	0.64	0.37
OverSpillage Grid 1	4	Surface Illuminance	lux	23.0	0.00 0.00
Spillage Grid	5	Surface Illuminance	lux		
Horizontal	5	Horizontal Illuminance	lux		

Glare Rating for Grid of Observers:

Calculation	Switching Mode	Observer Grid	Reference Grid	Reflectance	GR-Max
Glare Rating	1	Football	Football	0.25	44.9

Obtrusive Light Calculations:

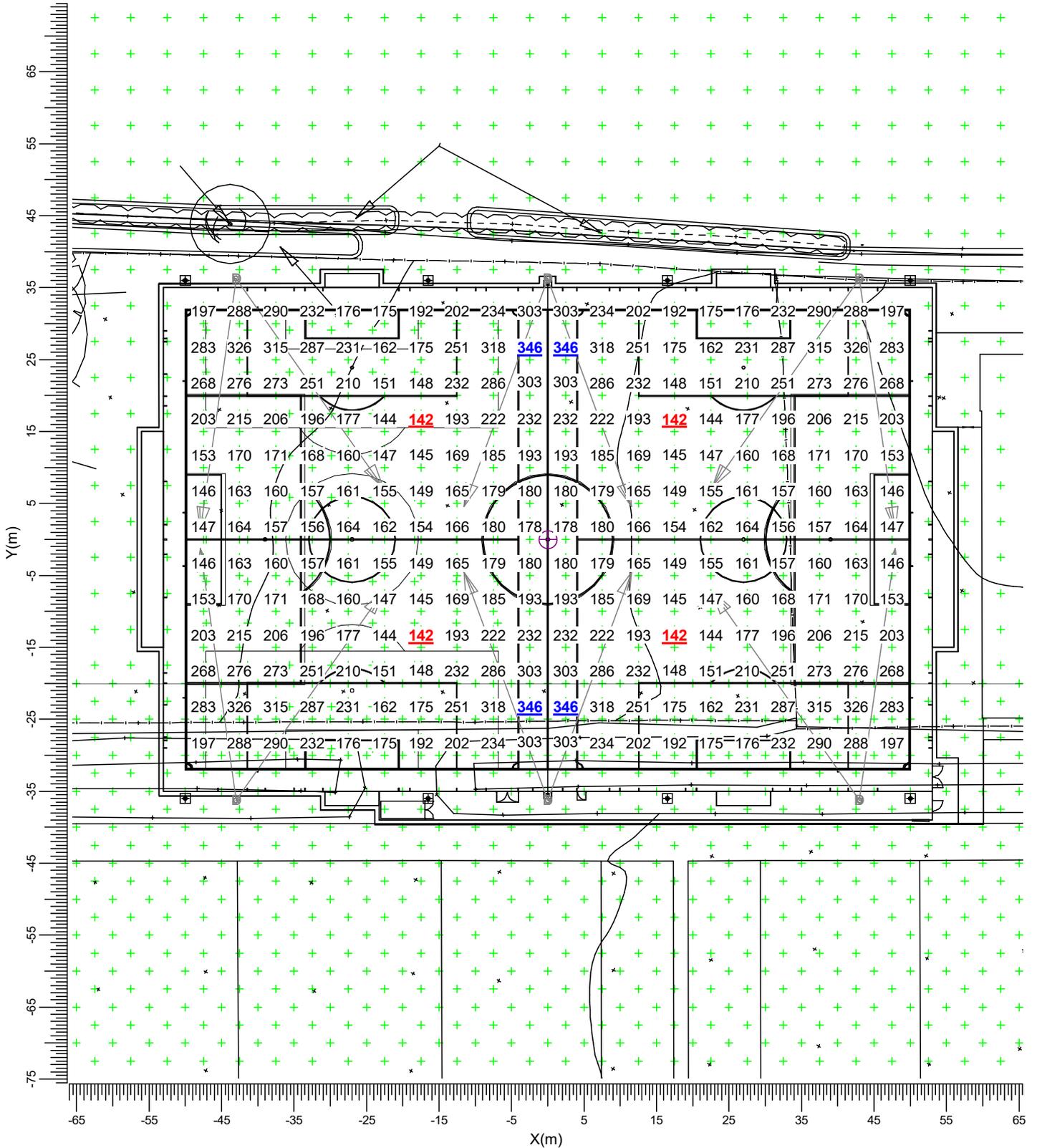
Switching Mode	ULR
1	0.00
2	0.00
3	0.00
4	0.00
5	0.00

3. Calculation Results

3.1 Football: Graphical Table

200lux Switching

Grid : Football at Z = -0.00 m
Calculation : Surface Illuminance (lux)



D —▶ BVP527 OUT T20 100K A55-N

Min/Ave
0.69

Min/Max
0.41

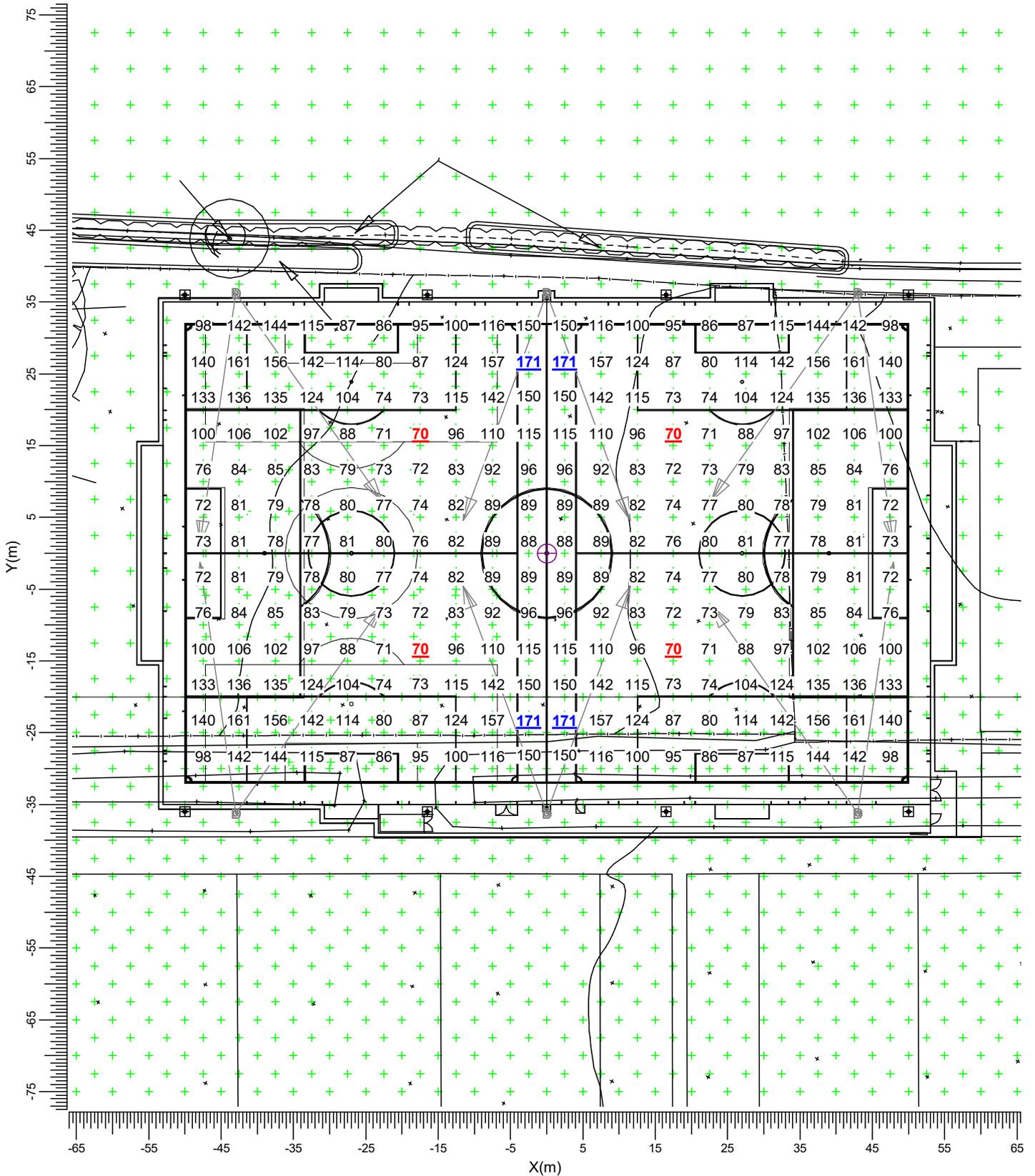
Project maintenance factor
0.95

Scale
1:750

3.2 Football 50%: Graphical Table

50%lux Switching

Grid : Football at Z = -0.00 m
Calculation : Surface Illuminance (lux)



D —▶ BVP527 OUT T20 100K A55-N

Min/Ave
0.69

Min/Max
0.41

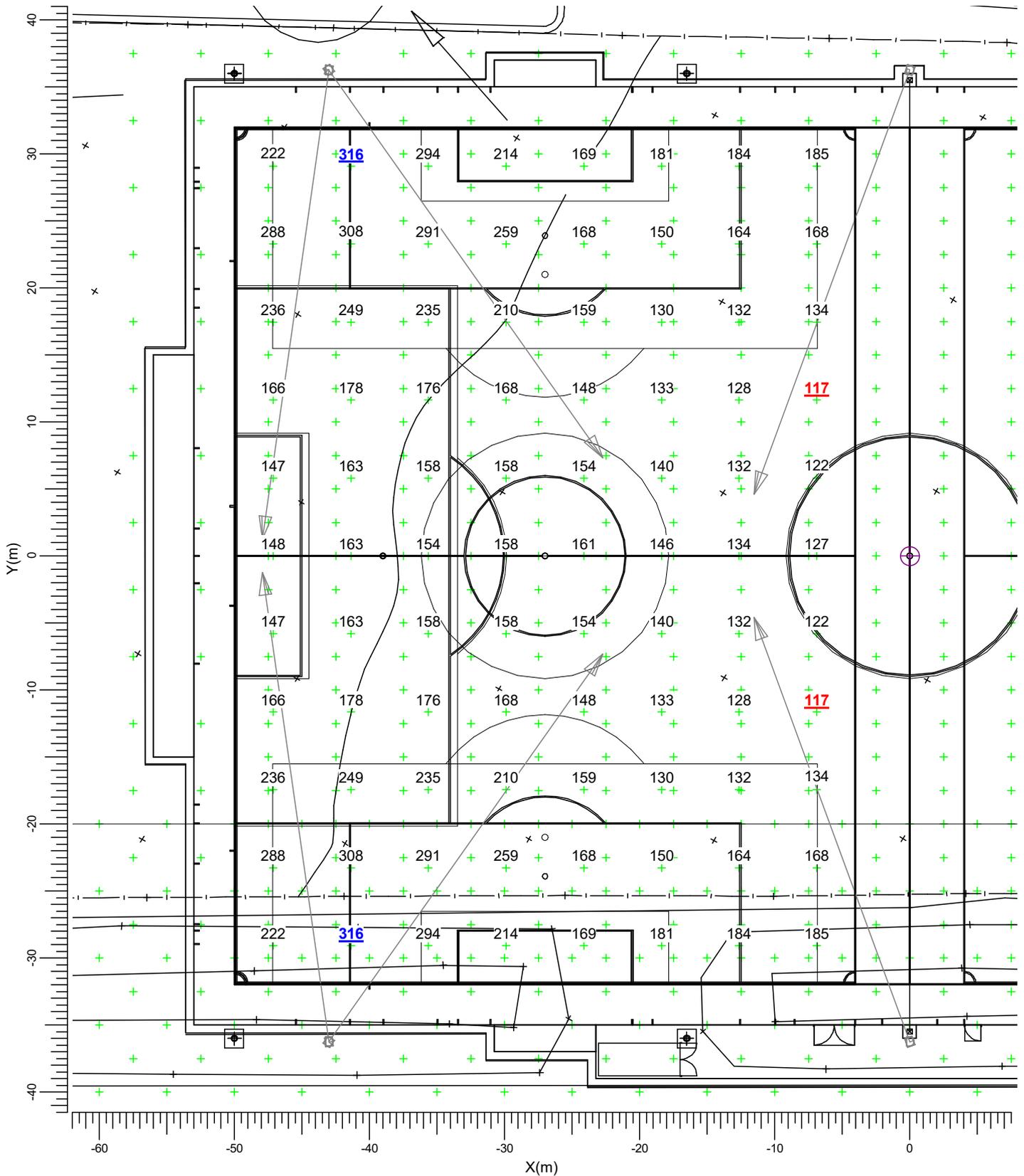
Project maintenance factor
0.47

Scale
1:750

3.3 Half Pitch: Graphical Table

Half Pitch Switching

Grid : Half Pitch at Z = -0.00 m
Calculation : Surface Illuminance (lux)



D ———▶ BVP527 OUT T20 100K A55-N

Min/Ave
0.64

Min/Max
0.37

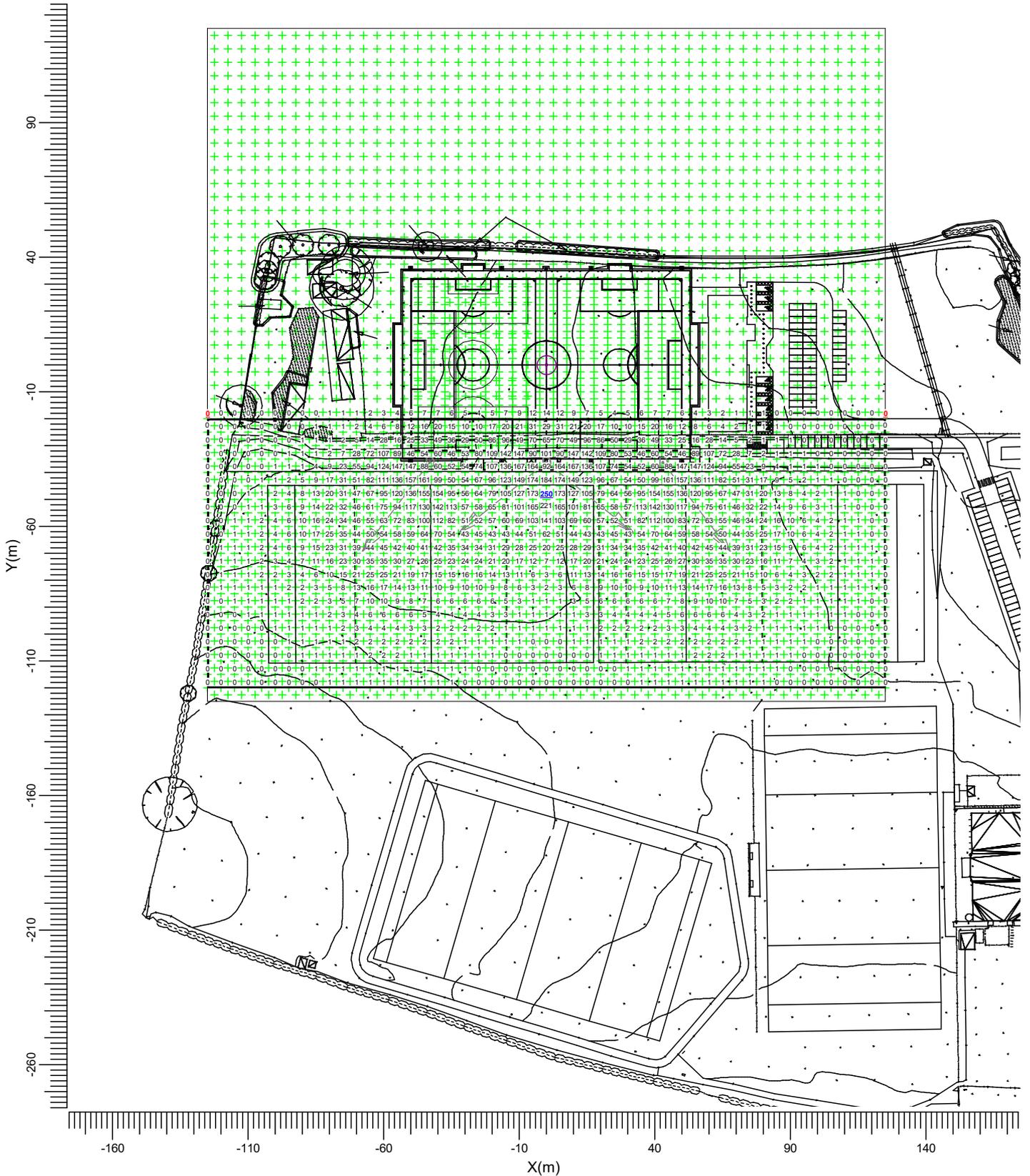
Project maintenance factor
0.95

Scale
1:400

3.4 OverSpillage Grid 1: Graphical Table

Over Spillage Switching

Grid : OverSpillage Grid 1 at Z = -0.00 m
 Calculation : Surface Illuminance (lux)



D BVP527 OUT T20 100K A55-N

Average
23.0

Min/Ave
0.00

Min/Max
0.00

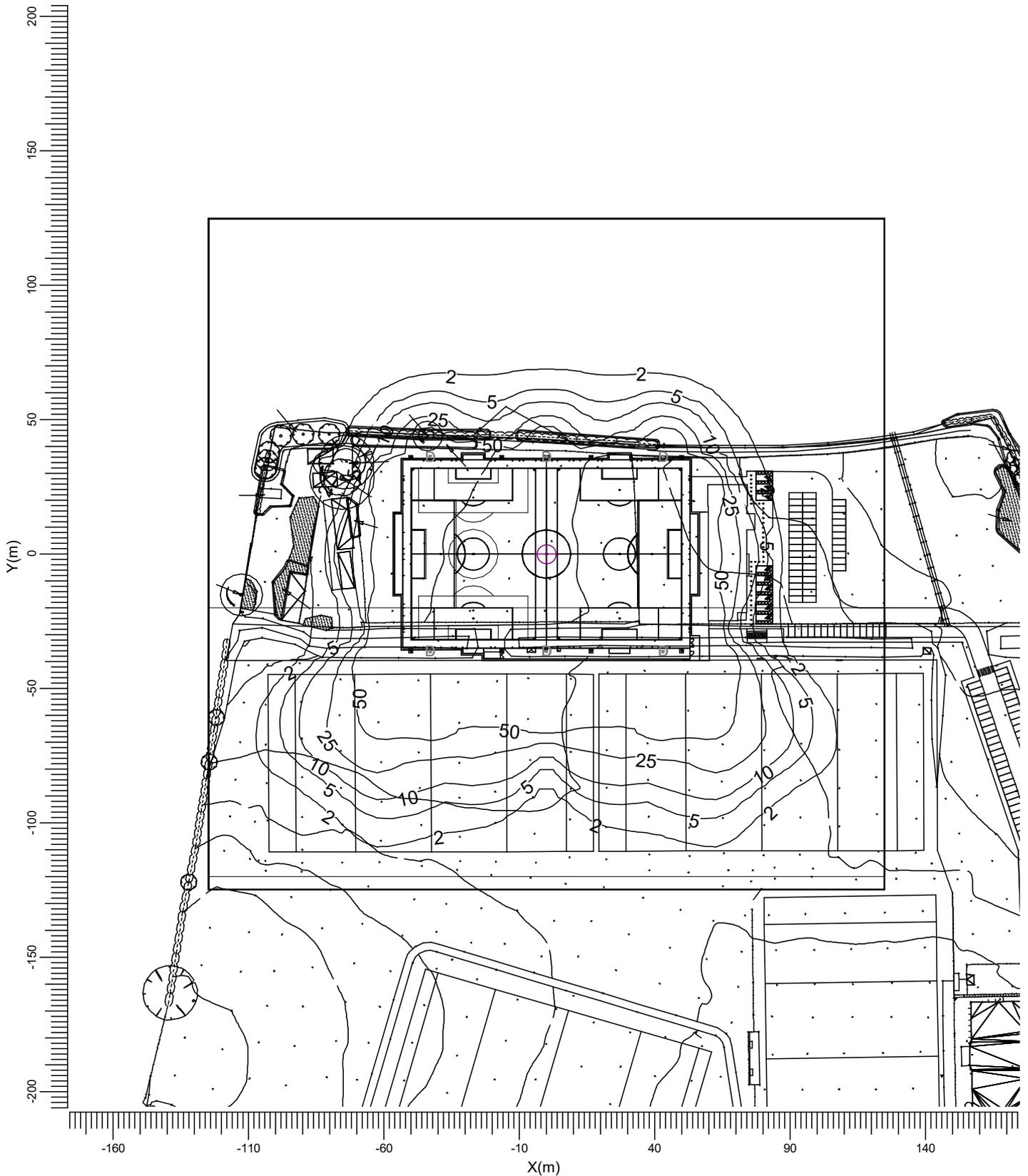
Project maintenance factor
0.95

Scale
1:2000

3.5 Spillage Grid: Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m
Calculation : Surface Illuminance (lux)



D: BVP527 OUT T20 100K A55-NB

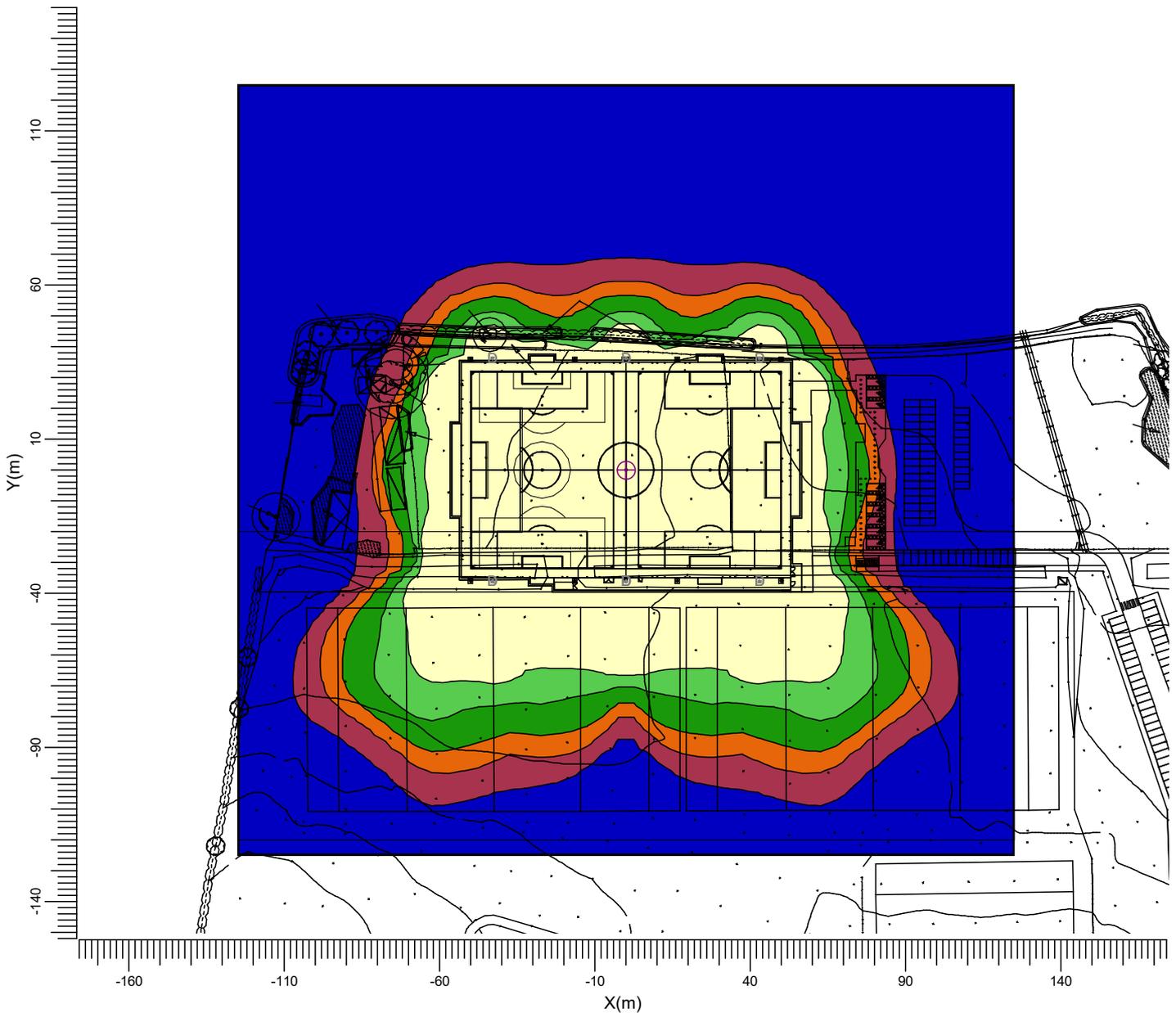
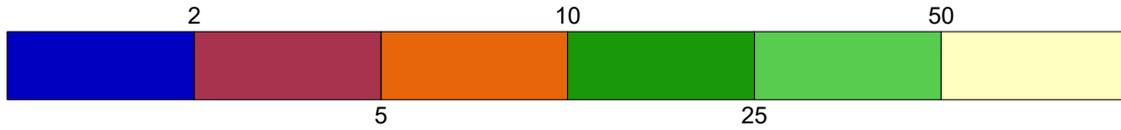
Project maintenance factor
1.00

Scale
1:2000

3.6 Spillage Grid: Filled Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m
Calculation : Surface Illuminance (lux)



D : BVP527 OUT T20 100K A55-NB

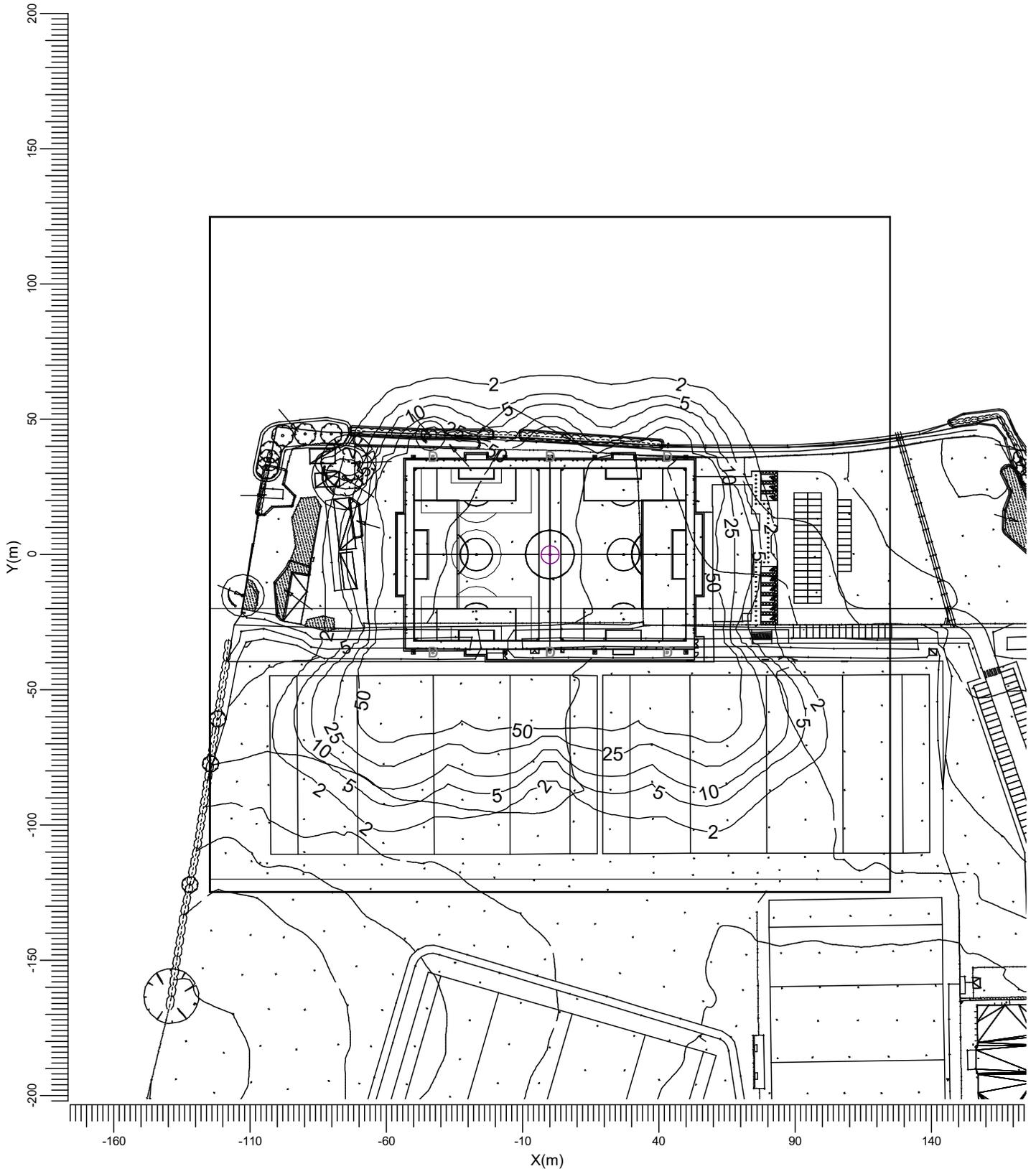
Project maintenance factor
1.00

Scale
1:2000

3.7 Horizontal: Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)
Height above grid : 1.80 m



D : BVP527 OUT T20 100K A55-NB

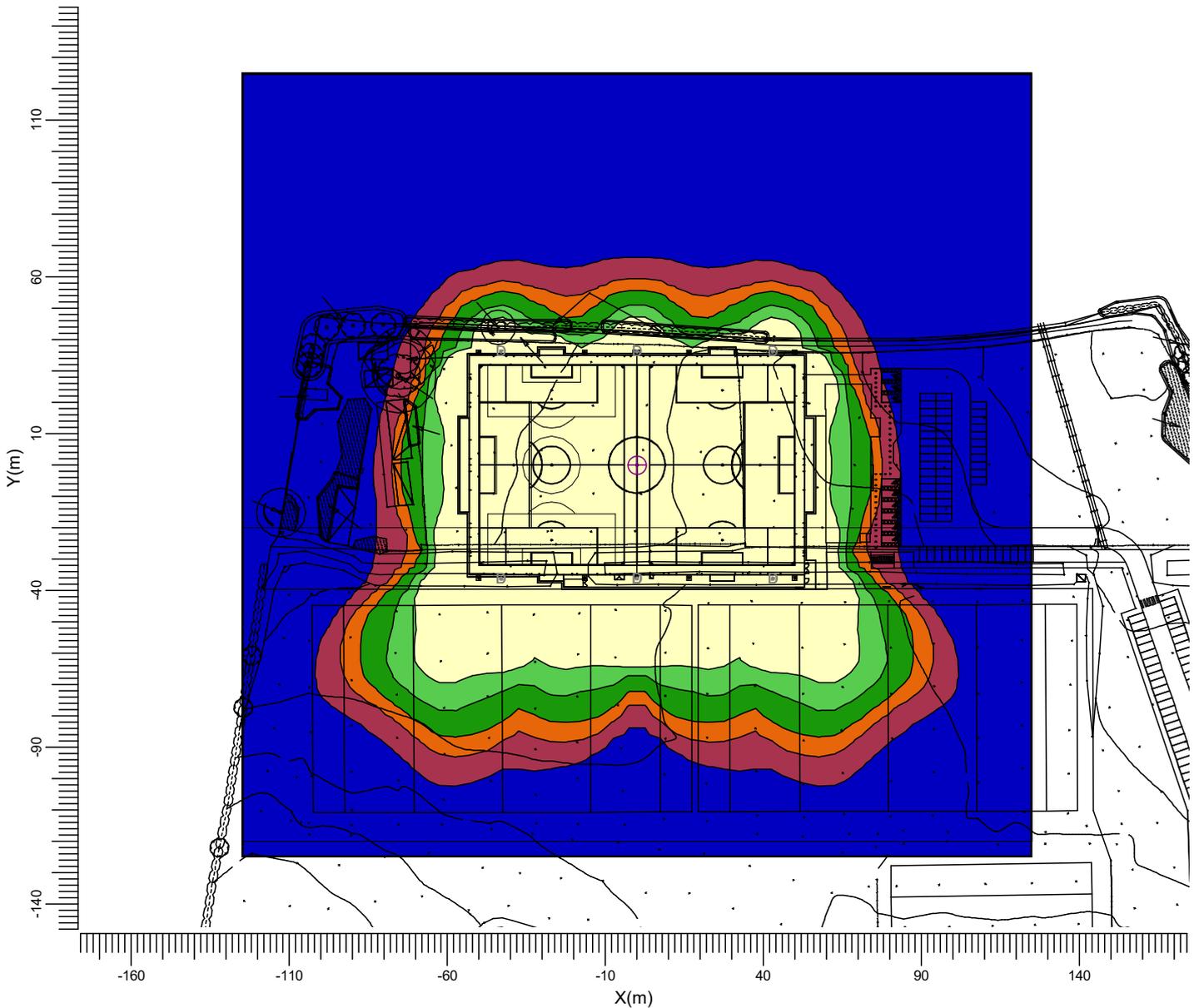
Project maintenance factor
1.00

Scale
1:2000

3.8 Horizontal: Filled Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)
Height above grid : 1.80 m



D : BVP527 OUT T20 100K A55-NB

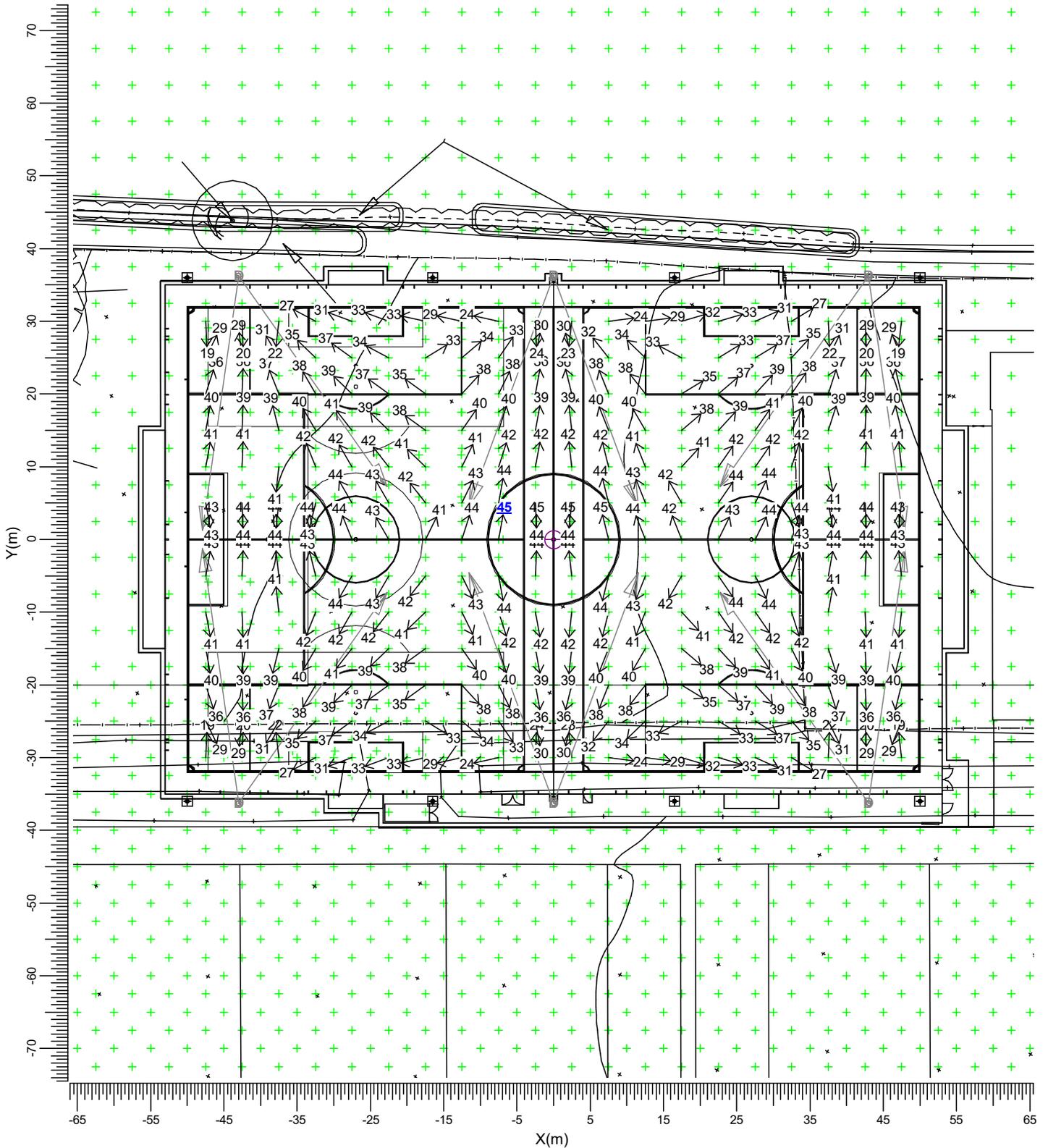
Project maintenance factor
1.00

Scale
1:2000

3.9 Glare Rating: Graphical Table

200lux Switching

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



D  BVP527 OUT T20 100K A55-N

Maximum
44.9

Project maintenance factor
0.95

Scale
1:750

4. Luminaire Details

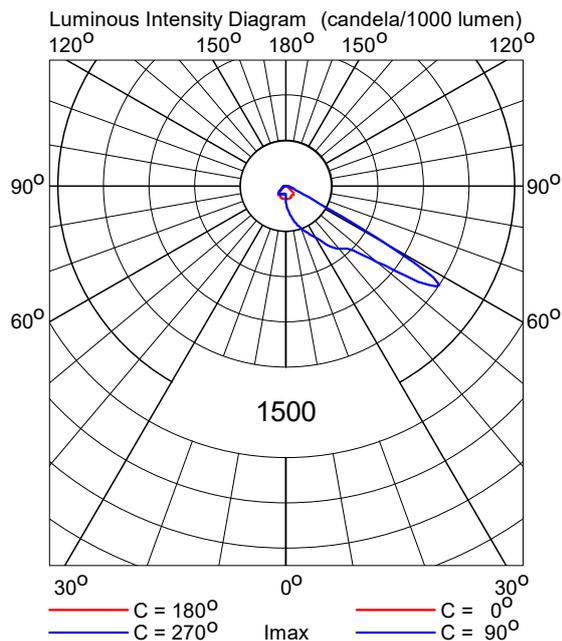
4.1 Project Luminaires

OptiVision LED
BVP527 OUT T20 100K 1xLED2120/757 A55-NB

Light output ratios

DLOR	: 0.78
ULOR	: 0.00
TLOR	: 0.78
Ballast	: N/A
Lamp flux	: 212481 lm
Luminaire wattage	: 1500.0 W
Measurement code	: LVA1902009

Note: Luminaire data not from database.



5. Installation Data

5.1 Legends

Project Luminaires:

Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
D	16	BVP527 OUT T20 100K A55-NB	1 * LED2120/757	1 * 212481

Switching Modes:

Code	Switching Mode
1	200lux Switching
2	Half Pitch Switching
3	50%lux Switching
4	Over Spillage Switching
5	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
1 * D	-43.00	-36.25	15.00	-127.1	70.0	-0.0	-	-	-	+	+
1 * D	-43.00	-36.25	15.00	55.0	67.0	-0.0	+	+	+	-	+
1 * D	-43.00	-36.25	15.00	98.0	67.0	-0.0	+	+	+	-	+
1 * D	-43.00	36.25	15.00	-55.0	67.0	0.0	+	+	+	-	+
1 * D	-43.00	36.25	15.00	-98.0	67.0	0.0	+	+	+	-	+
1 * D	-0.00	-36.25	15.00	-140.8	70.0	0.0	-	-	-	+	+
1 * D	-0.00	-36.25	15.00	-39.2	70.0	-0.0	-	-	-	+	+
1 * D	-0.00	-36.25	15.00	110.0	66.0	-0.0	+	+	+	-	+
1 * D	-0.00	-36.25	15.00	70.0	66.0	-0.0	+	-	+	-	+
1 * D	-0.00	36.25	15.00	-110.0	66.0	0.0	+	+	+	-	+
1 * D	-0.00	36.25	15.00	-70.0	66.0	0.0	+	-	+	-	+
1 * D	43.00	-36.25	15.00	-52.9	70.0	0.0	-	-	-	+	+
1 * D	43.00	-36.25	15.00	125.0	67.0	-0.0	+	-	+	-	+
1 * D	43.00	-36.25	15.00	82.0	67.0	-0.0	+	-	+	-	+
1 * D	43.00	36.25	15.00	-125.0	67.0	0.0	+	-	+	-	+
1 * D	43.00	36.25	15.00	-82.0	67.0	0.0	+	-	+	-	+