

Brookside Tennis Club, Highgate

3 Courts

Project code: LSC10899/1

Date: 01-06-2023

Designer: John Telford

Description: Designed to meet LTA minimum Standards
PPA = 400-500 lux (maintained)
TPA = 300-400 lux (maintained)

All floodlights mounted at 6 metres

Design completed using a total of 18 no Philips
ClearFlood Large LED floodlights.

BV651 T25 1xLED890-4S@100kh/740 FP DX60

Floodlight tilt = 34° (above flat glass position)

BV651 T25 1xLED890-4S@100kh/740 FP DX50

Floodlight tilt = 65° (above flat glass position)

Lighting Equipment

6 x 6m Columns

Each carrying 2 x BV651 T25 1xLED890-4S@100kh/740 FP DX60

6 x 6m Columns

Each carrying 1 x BV651 T25 1xLED890-4S@100kh/740 FP DX60

550w per fitting = 9.9 Kw Total Load

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.

Powerplus Group

Linley Court,

Longacre

Bingham

Nottinghamshire

NG13 8FA

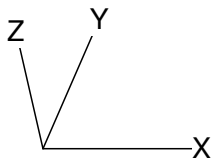
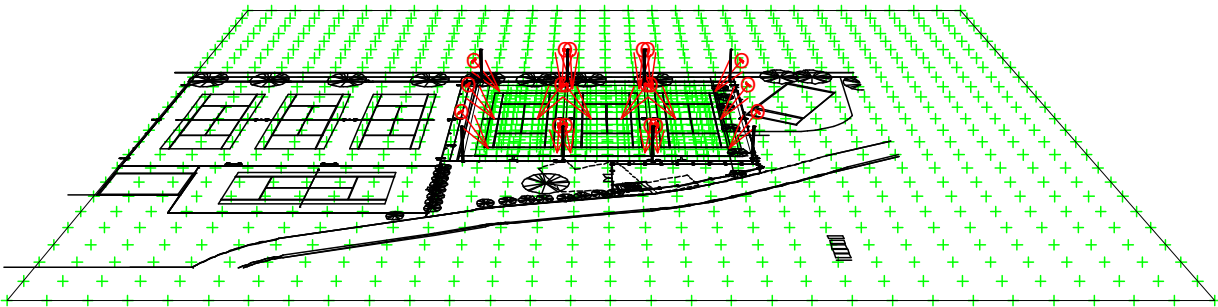
Telephone: 0330 120 0889

Table of Contents

1.	Project Description	3
1.1	3-D Project Overview	3
1.2	Top Project Overview	4
2.	Summary	5
2.1	Obstacle Information	5
2.2	Project Luminaires	5
2.3	Calculation Results	5
3.	Calculation Results	7
3.1	Court 1 PPA: Graphical Table	7
3.2	Court 1 TPA: Graphical Table	8
3.3	Court 2 PPA: Graphical Table	9
3.4	Court 2 TPA: Graphical Table	10
3.5	Court 3 PPA: Graphical Table	11
3.6	Court 3 TPA: Graphical Table	12
3.7	GR Max Court 2: Graphical Table	13
3.8	Overspill: Graphical Table	14
3.9	Overspill: Iso Contour	15
3.10	Overspill: Filled Iso Contour	16
4.	Luminaire Details	17
4.1	Project Luminaires	17
5.	Installation Data	18
5.1	Legends	18
5.2	Luminaire Positioning and Orientation	18

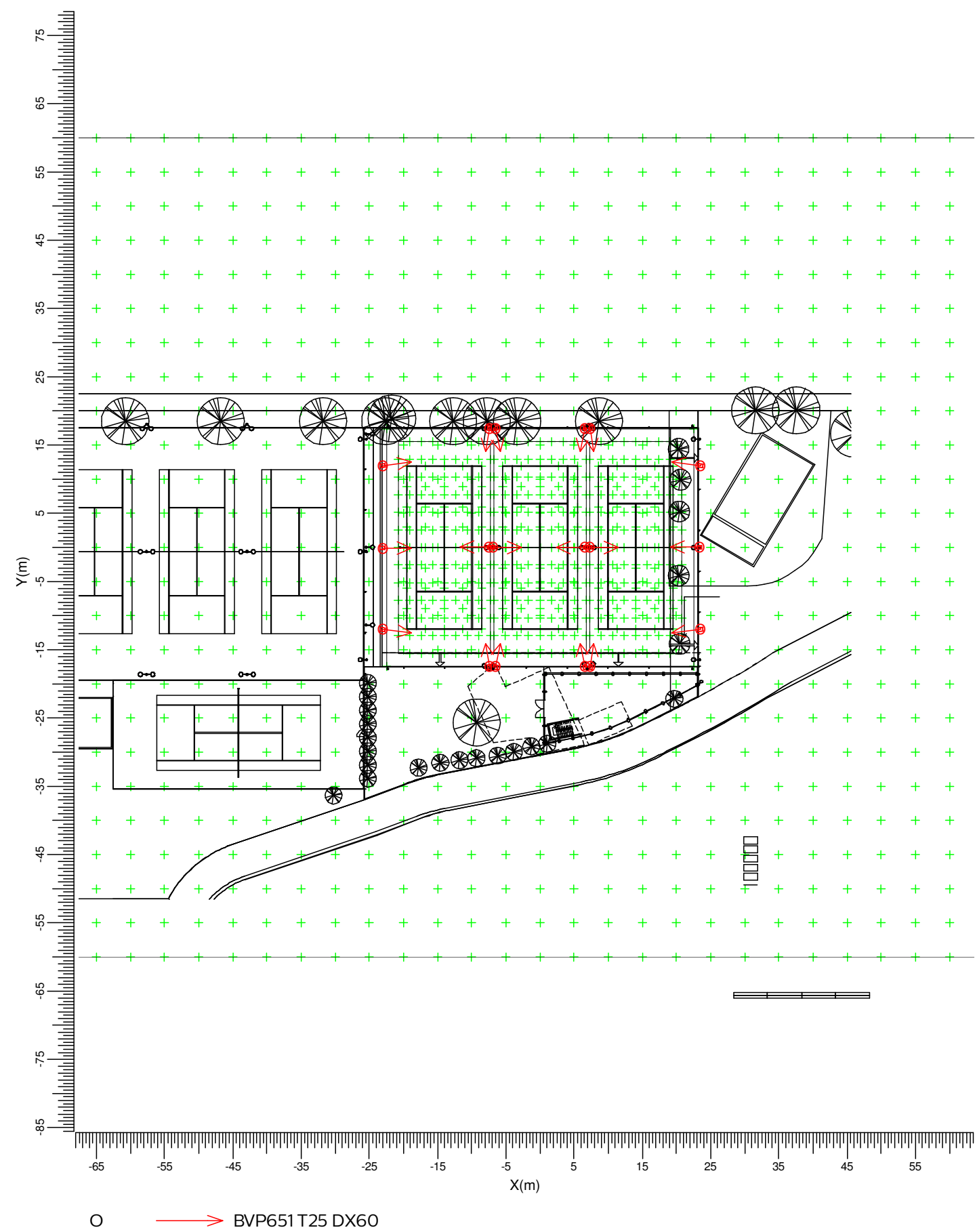
1. Project Description

1.1 3-D Project Overview



O → BVP651 T25 DX60

1.2 Top Project Overview



Scale
1:750

2. Summary

2.1 Obstacle Information

Obstacle	Transparency (%)	Position		
		X (m)	Y (m)	Z (m)
Pillar	100	-6.88	-17.80	0.00
		-22.32	-17.80	0.00
		-6.88	17.80	0.00
		-22.32	17.80	0.00
Pillar1	100	6.88	-17.80	0.00
		22.32	-17.80	0.00
		6.88	17.80	0.00
		22.32	17.80	0.00

2.2 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
O	18	BVP651 T25 DX60	1 * LED890-4S L95@100kh	550.0	1 * 90000

The total installed power: 9.90 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code	Power (kWatt)
	O	
Court 1	6	3.30
Court 2	6	3.30
Court 3	6	3.30
All lights on	18	9.90

Number of Luminaires Per Arrangement:

Arrangement	Luminaire Code	Power (kWatt)
	O	
Court 1 Left	2	1.10
Court 1 Right	2	1.10
Court 2 Left	2	1.10
Court 2 Right	2	1.10
Court 3 Left	2	1.10
Court 3 Right	2	1.10
Individuals	6	3.30

2.3 Calculation Results

Switching Modes:

Code	Switching Mode	Maintenance factor
1	Court 1	0.90
2	Court 2	0.90
3	Court 3	0.90
4	All lights on	1.00

(II)luminance Calculations:

Calculation	Switching Mode	Type	Unit	Ave	Min	Min/Ave	Min/Max
Court 1 PPA	1	Surface Illuminance	lux	516	408	0.79	0.52
Court 1 TPA	1	Surface Illuminance	lux	500		0.61	0.36
Court 2 PPA	2	Surface Illuminance	lux	525		0.72	0.45
Court 2 TPA	2	Surface Illuminance	lux	504		0.65	0.37
Court 3 PPA	3	Surface Illuminance	lux	504		0.79	0.49
Court 3 TPA	3	Surface Illuminance	lux	490		0.60	0.34
Overspill	4	Surface Illuminance	lux	71.8		0.00	0.00

Glare Rating for Grid of Observers:

Calculation	Switching Mode	Observer Grid	Reference Grid	Reflectance	GR-Max
GR Max Court 2	2	Court 2 TPA	Court 2 TPA	0.25	38.8

Obtrusive Light Calculations:

Switching Mode	ULR
1	0.01
2	0.01
3	0.01
4	0.01

3. Calculation Results

3.1 Court 1 PPA: Graphical Table

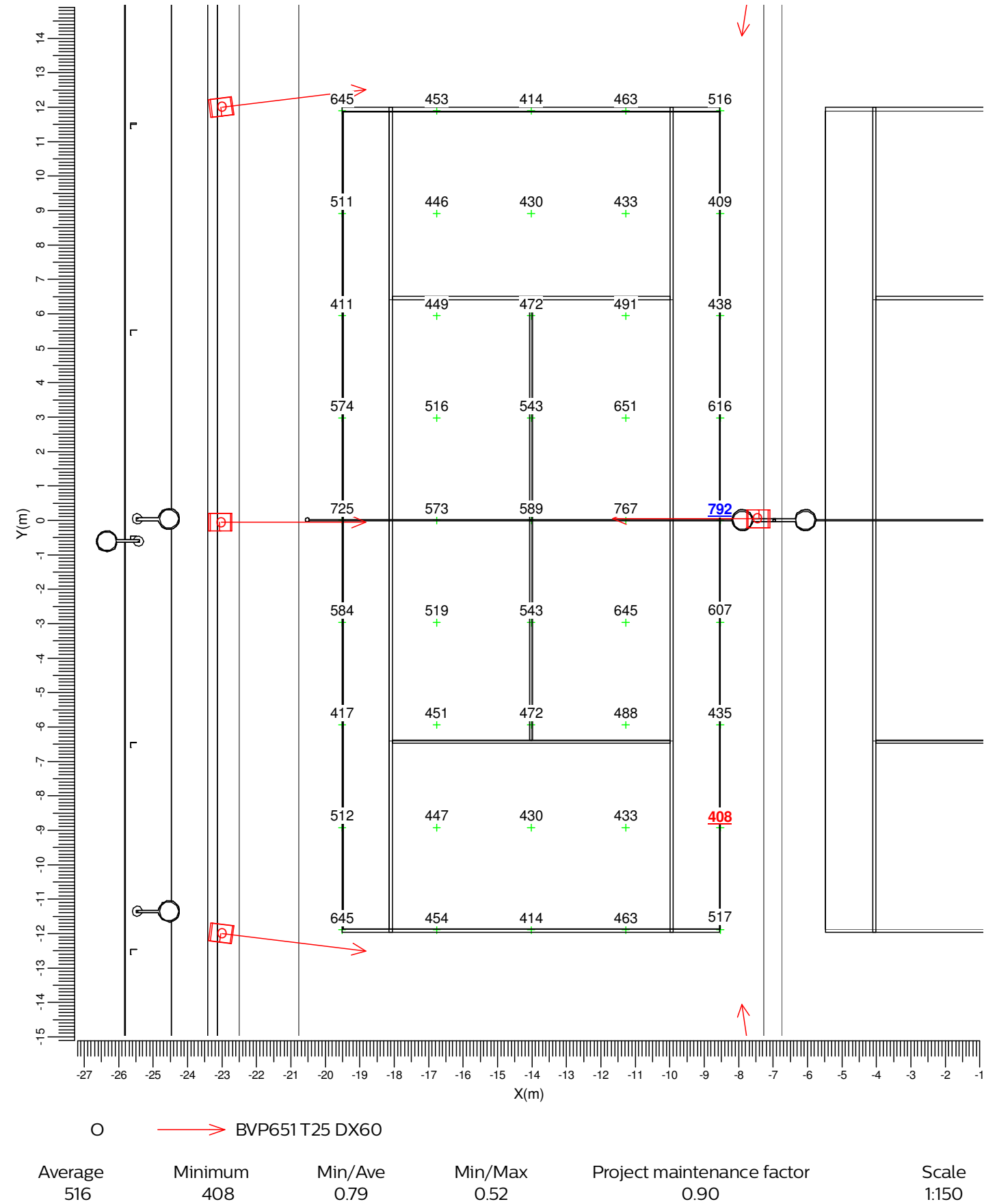
Court 1

Grid

: Court 1 PPA at Z = -0.00 m

Calculation

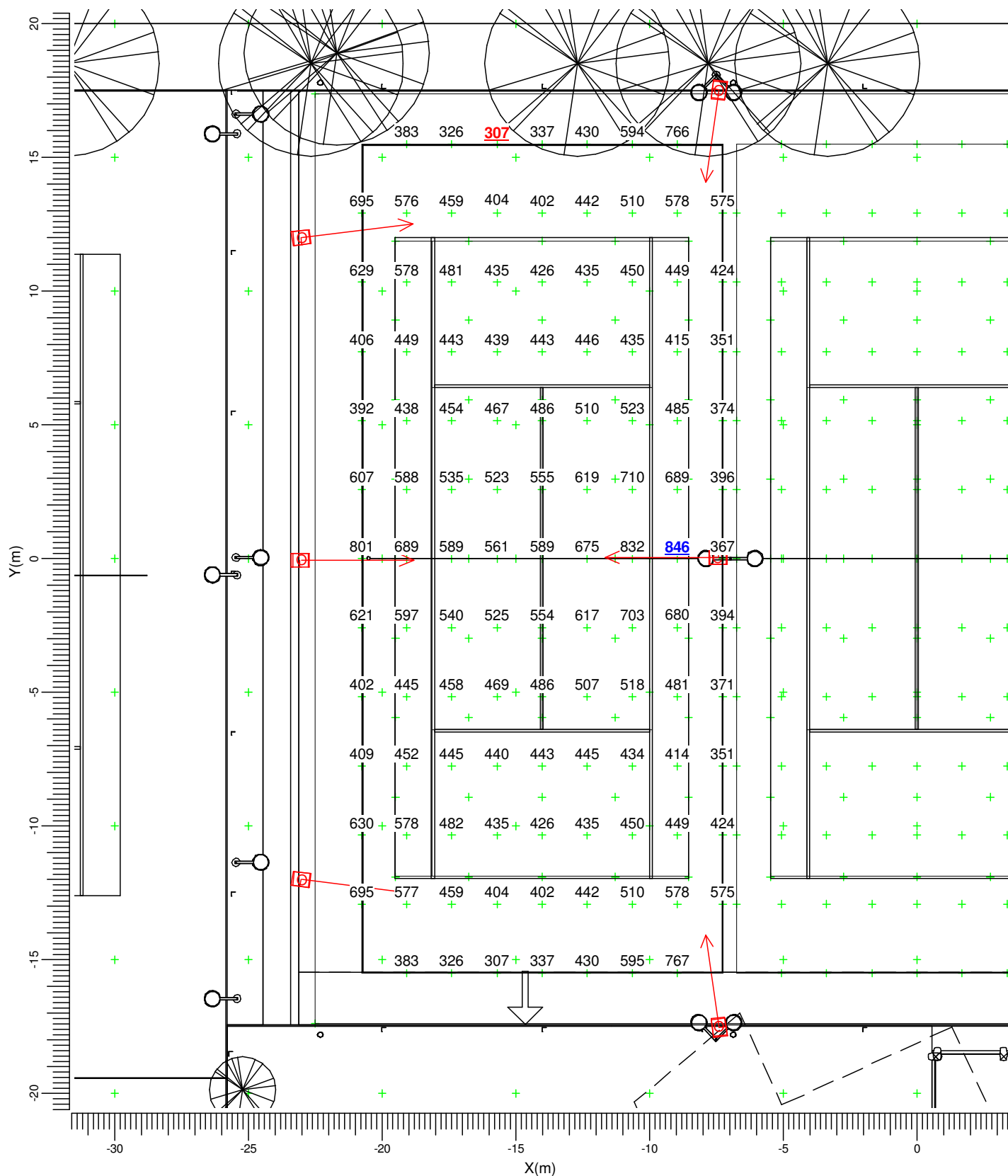
: Surface Illuminance (lux)



3.2 Court 1 TPA: Graphical Table

Court 1

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



O → BVP651 T25 DX60

Average
500

Min/Ave
0.61

Min/Max
0.36

Project maintenance factor
0.90

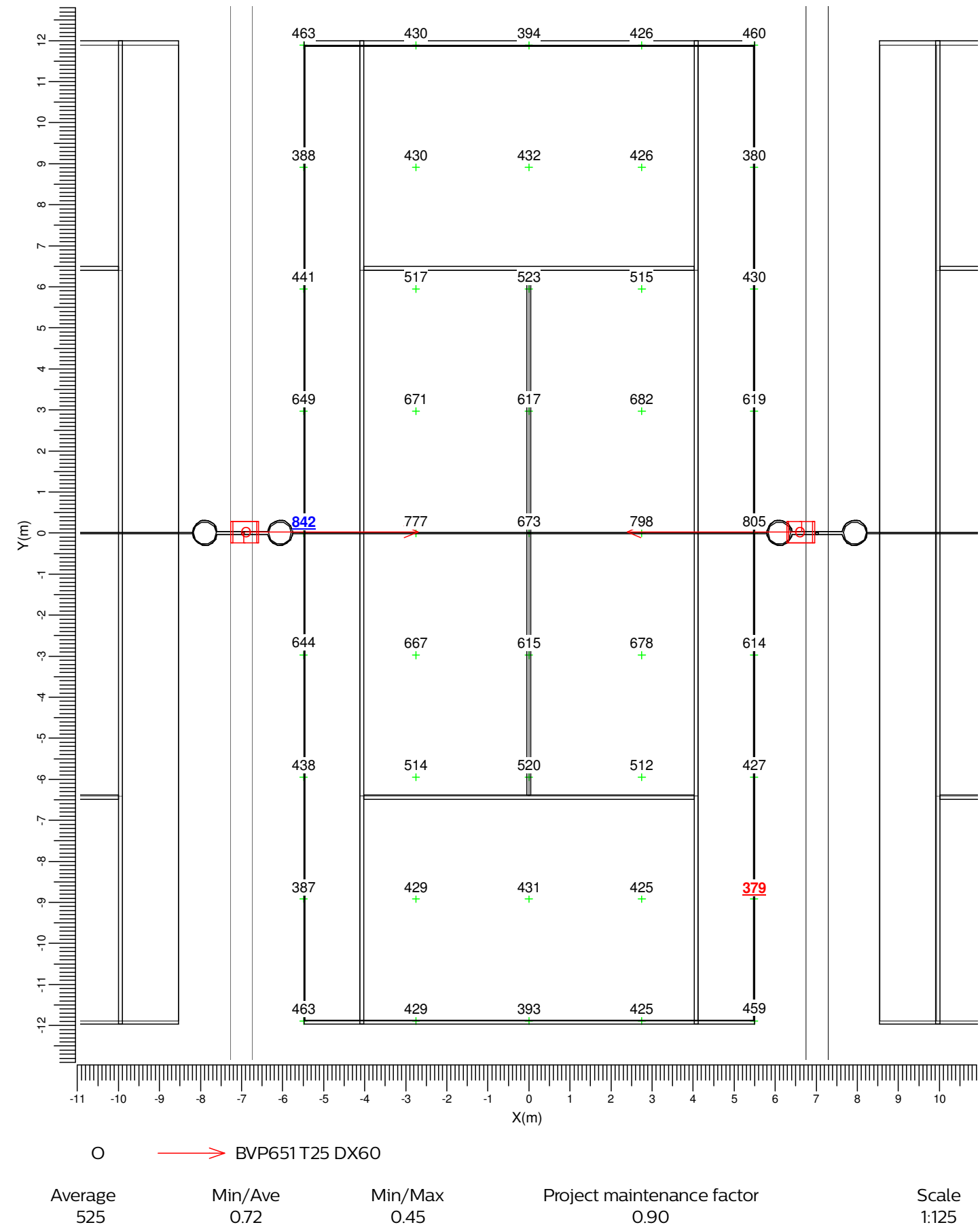
Scale
1:200

3.3 Court 2 PPA: Graphical Table

Court 2

Grid : Court 2 PPA at Z = -0.00 m

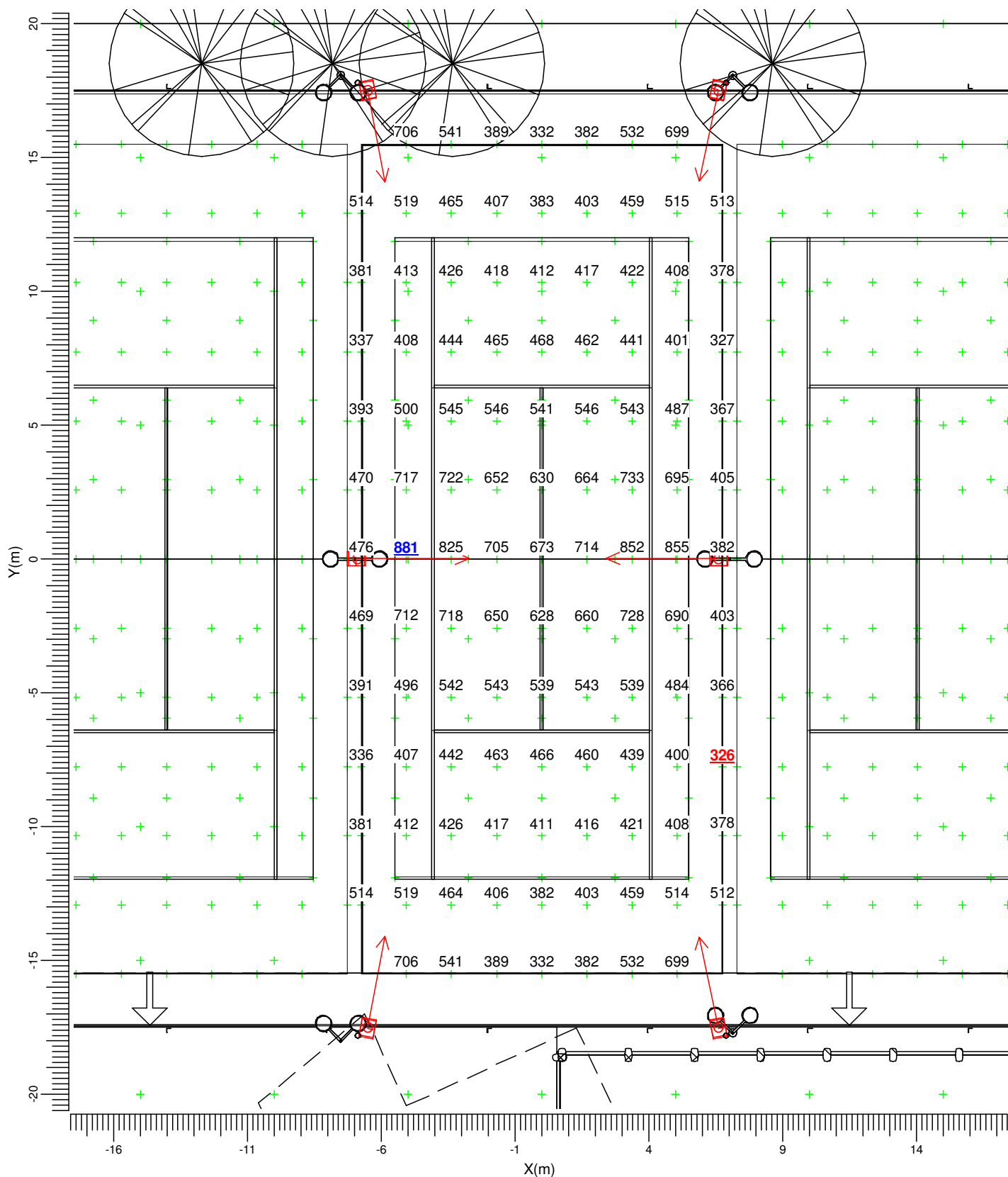
Calculation : Surface Illuminance (lux)



3.4 Court 2 TPA: Graphical Table

Court 2

Grid : Court 2 TPA at Z = -0.00 m
Calculation : Surface Illuminance (lux)



O → BVP651 T25 DX60

Average
504

Min/Ave
0.65

Min/Max
0.37

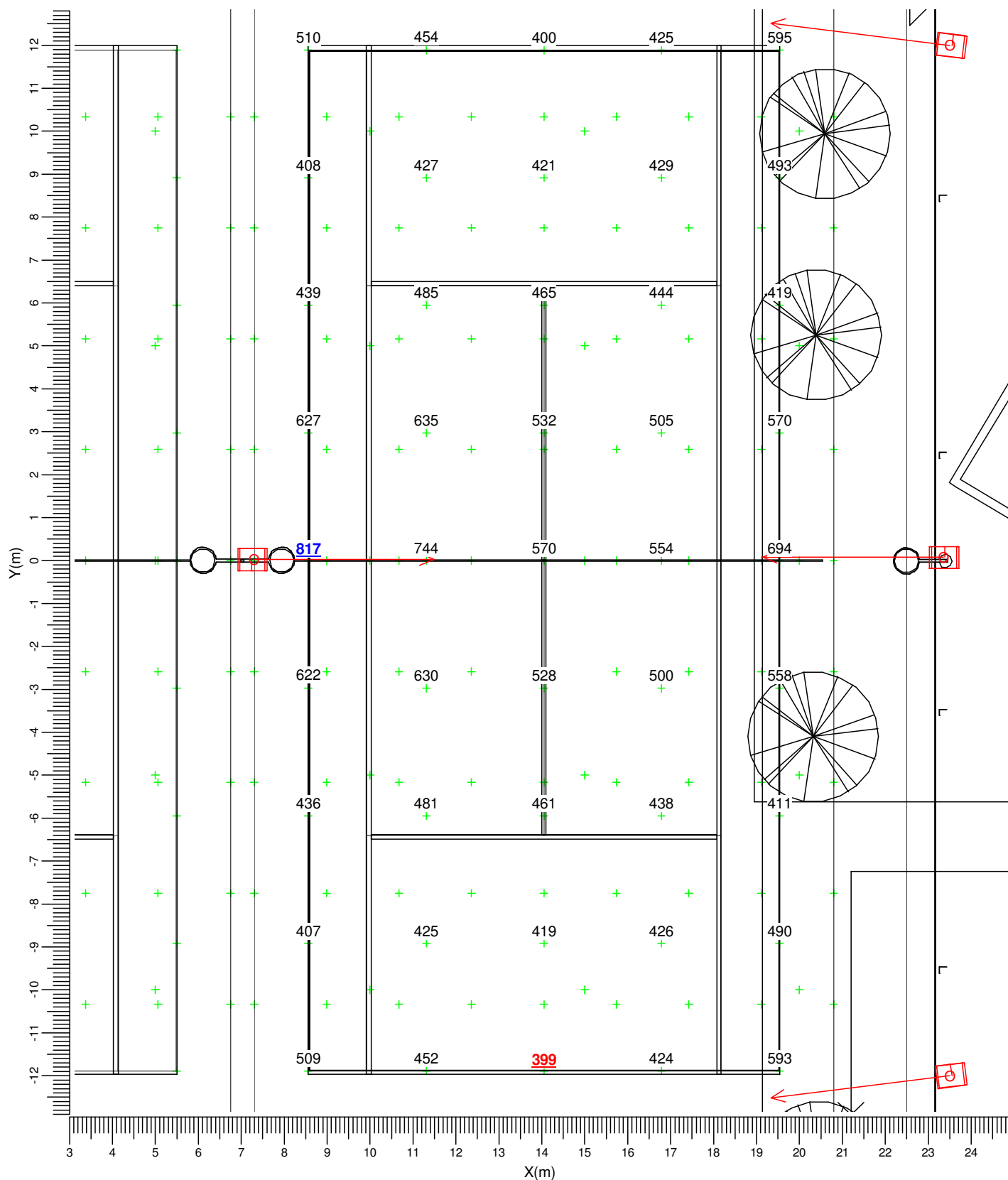
Project maintenance factor
0.90

Scale
1:200

3.5 Court 3 PPA: Graphical Table

Court 3

Grid : Court 3 PPA at Z = -0.00 m
Calculation : Surface Illuminance (lux)



O → BVP651 T25 DX60

Average
504

Min/Ave
0.79

Min/Max
0.49

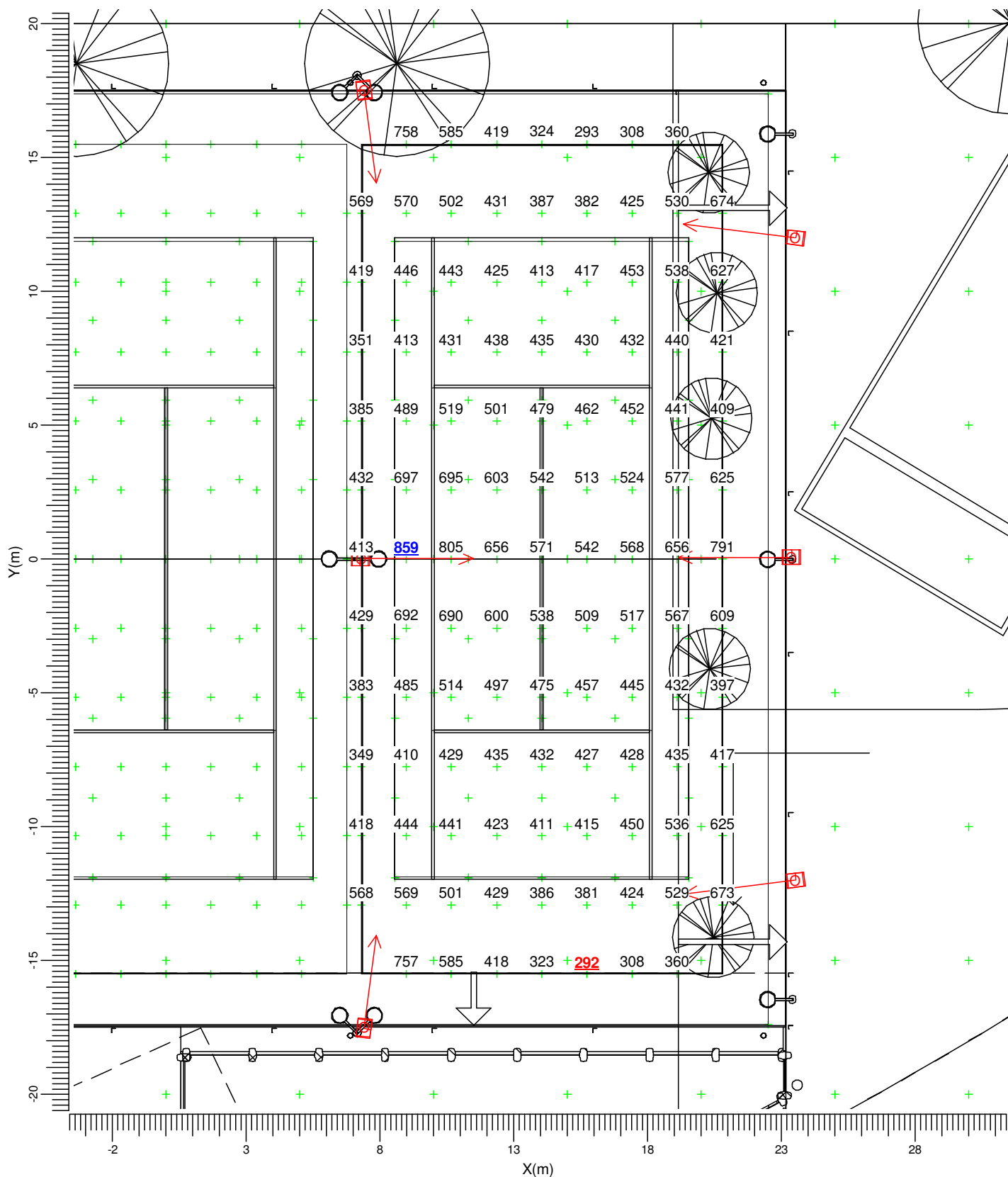
Project maintenance factor
0.90

Scale
1:125

3.6 Court 3 TPA: Graphical Table

Court 3

Grid : Court 3 TPA at Z = -0.00 m
Calculation : Surface Illuminance (lux)



Average
490

Min/Ave
0.60

Min/Max
0.34

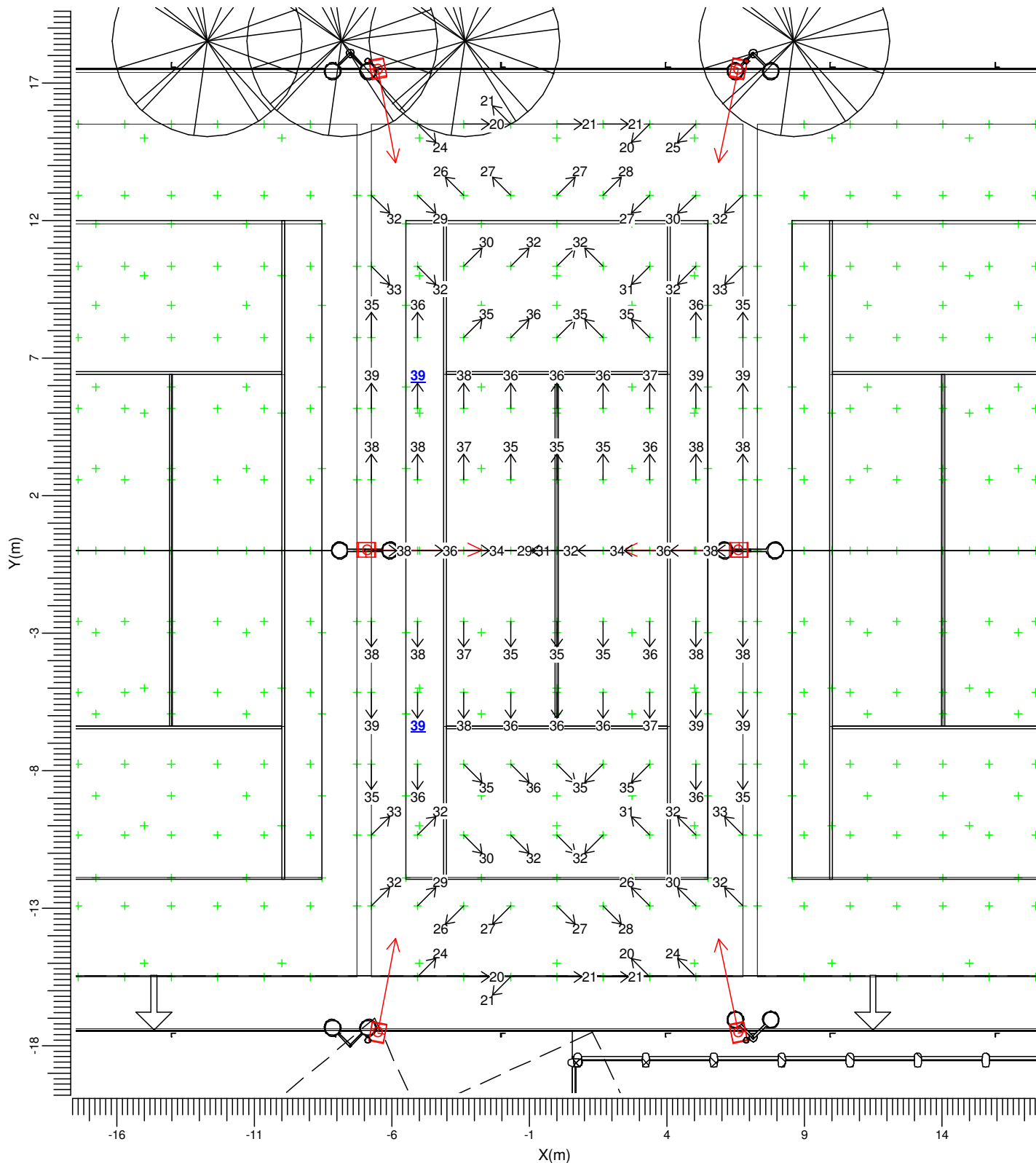
Project maintenance factor
0.90

Scale
1:200

3.7 GR Max Court 2: Graphical Table

Court 2

Grid of Observers : Court 2 TPA
Calculation : Glare Rating
Grid for Background Luminance: Court 2 TPA (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



O → BVP651 T25 DX60

Maximum
38.8

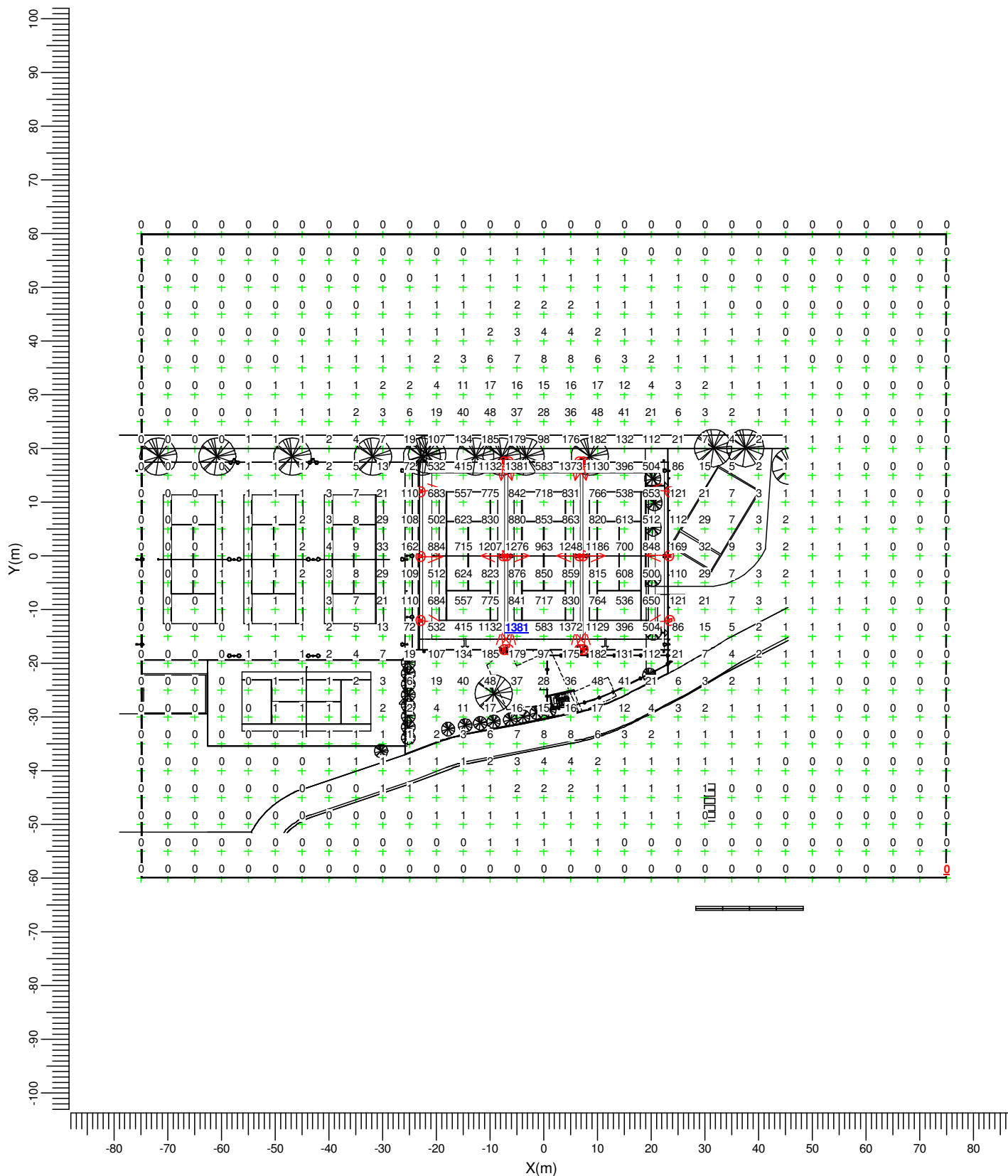
Project maintenance factor
0.90

Scale
1:200

3.8 Overspill: Graphical Table

All lights on

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



O → BVP651 T25 DX60

Average
71.8

Min/Ave
0.00

Min/Max
0.00

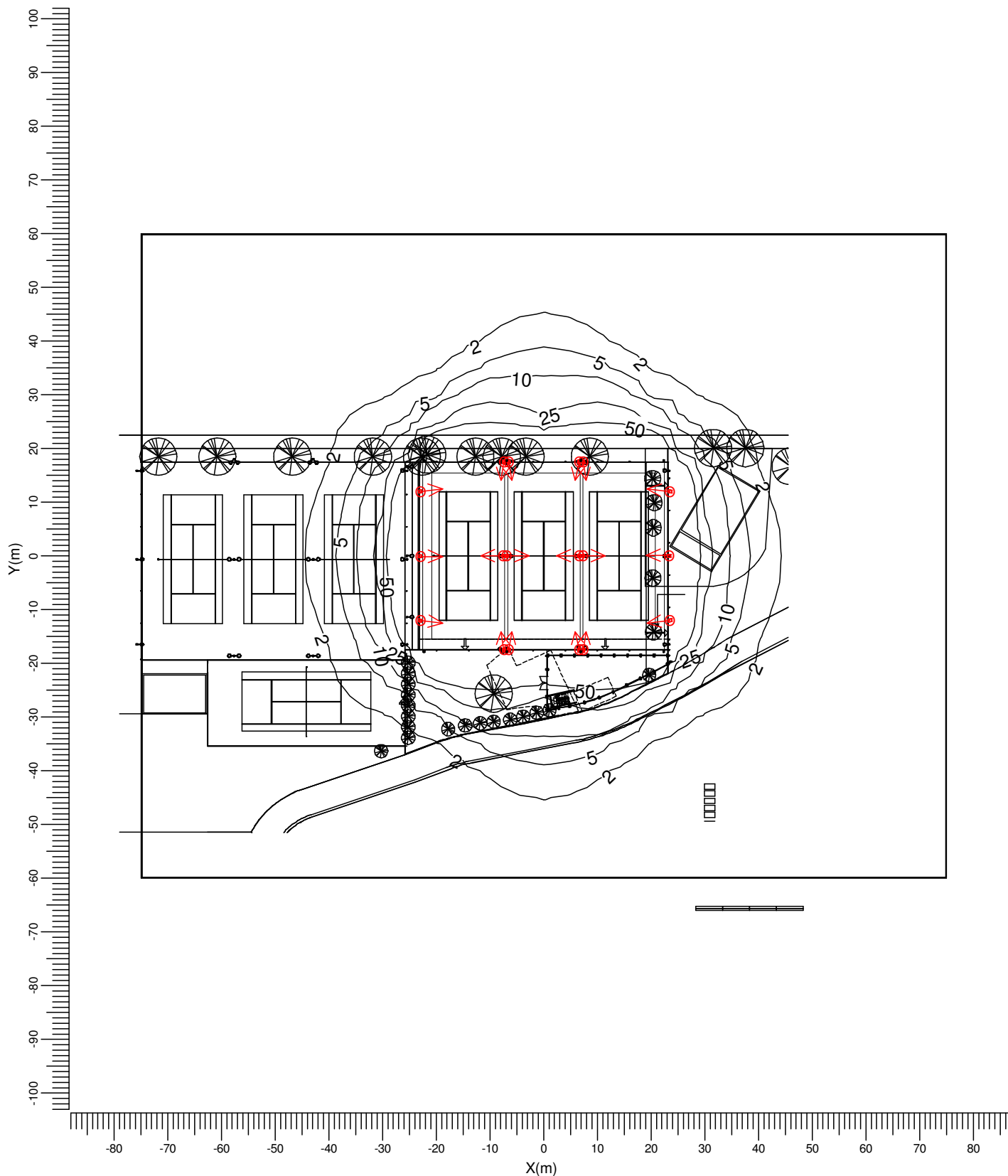
Project maintenance factor
1.00

Scale
1:1000

3.9 Overspill: Iso Contour

All lights on

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



O → BVP651 T25 DX60

Average
71.8

Min/Ave
0.00

Min/Max
0.00

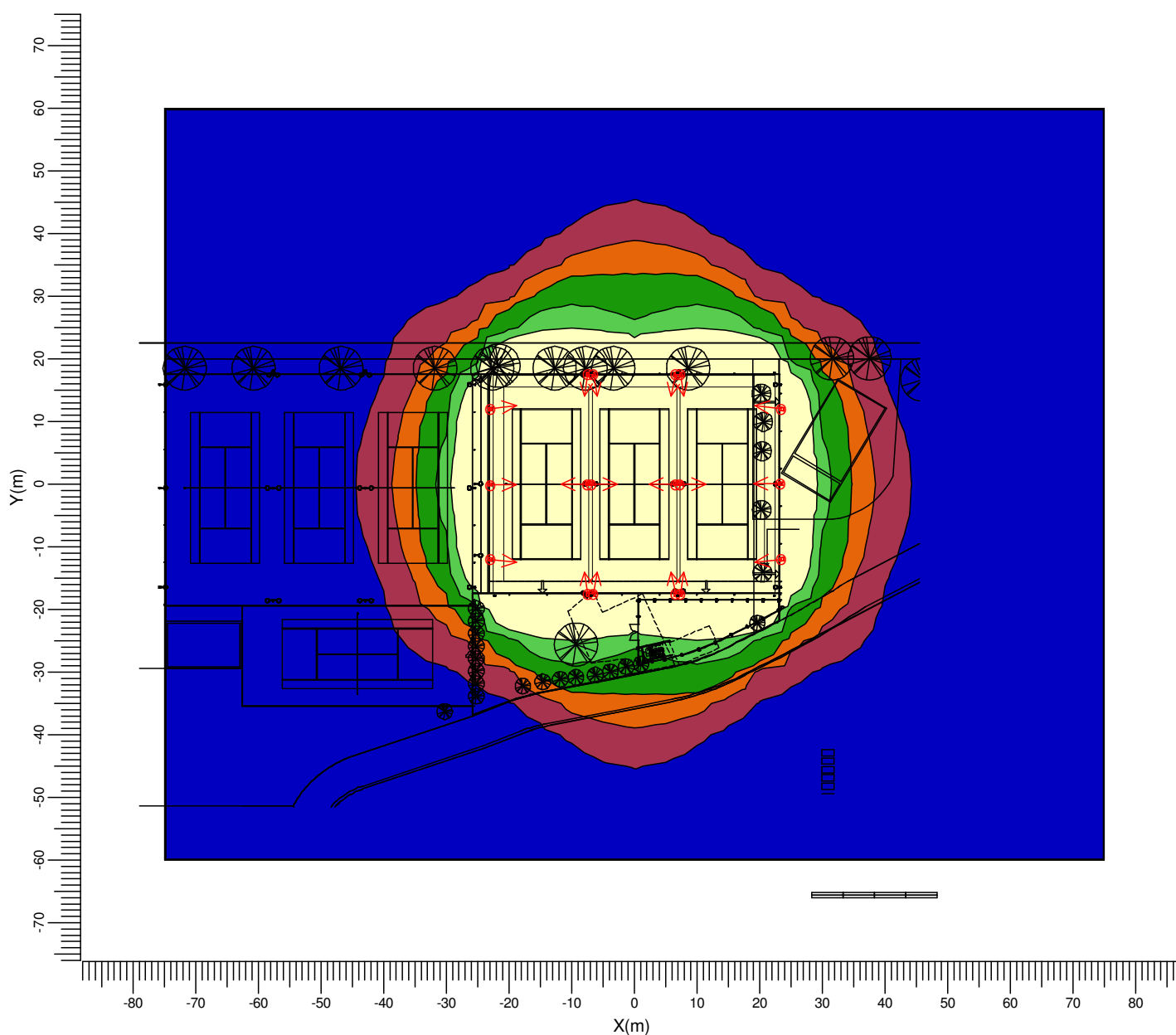
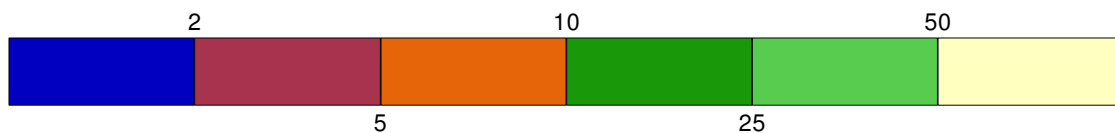
Project maintenance factor
1.00

Scale
1:1000

3.10 Overspill: Filled Iso Contour

All lights on

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



O → BVP651 T25 DX60

Average
71.8

Min/Ave
0.00

Min/Max
0.00

Project maintenance factor
1.00

Scale
1:1000

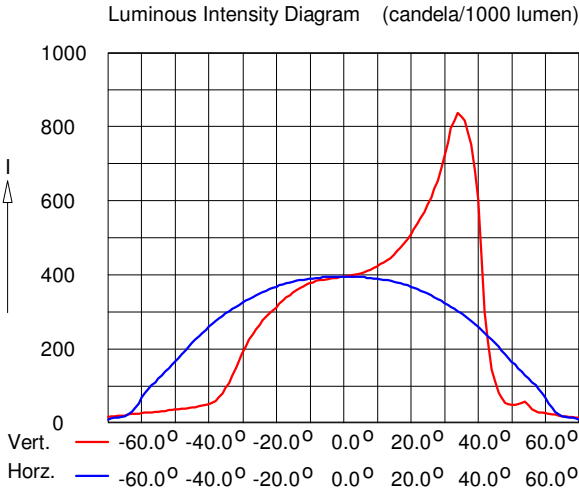
4. Luminaire Details

4.1 Project Luminaires

Clearflood Large
BVP651 T25 1xLED890-4S L95@100kh/740 FP DX60

Light output ratios	
DLOR	: 0.87
ULOR	: 0.00
TLOR	: 0.87
ULR	: 0.000
Ballast	: FP
Lamp flux	: 90000 lm
Luminaire wattage	: 550.0 W
Measurement code	: LVE177041B
CIE Code	: 69 96 100 100 87

Note: Luminaire data not from database.



5. Installation Data

5.1 Legends

Project Luminaires:

Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
O	18	BVP651 T25 DX60	1 * LED890-4S L95@100kh	1 * 90000

Arrangements:

Code	Arrangement
0	Individuals
1	Court 1 Left
2	Court 2 Left
3	Court 3 Left
4	Court 1 Right
5	Court 2 Right
6	Court 3 Right

Switching Modes:

Code	Switching Mode
1	Court 1
2	Court 2
3	Court 3
4	All lights on

5.2 Luminaire Positioning and Orientation

Including Aiming Points:

Qty and Code	Position			Aiming Points			ULR	Arr.	Switching Modes			
	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)			1	2	3	4
1 * O	-23.03	-0.06	6.00	-18.83	-0.06	0.00	0.015	0	+	-	-	+
1 * O	-7.46	0.04	6.00	-11.66	0.04	0.00	0.015	0	+	-	-	+
1 * O	-6.90	0.02	6.00	-2.70	0.02	0.00	0.015	0	-	+	-	+
1 * O	6.60	0.02	6.00	2.40	0.02	0.00	0.015	0	-	+	-	+
1 * O	7.28	0.02	6.00	11.48	0.02	0.00	0.015	0	-	-	+	+
1 * O	23.34	0.07	6.00	19.14	0.07	0.00	0.015	0	-	-	+	+
1 * O	-23.00	-12.00	6.00	-18.83	-12.51	0.00	0.015	1	+	-	-	+
1 * O	-23.00	12.00	6.00	-18.83	12.51	0.00	0.015	1	+	-	-	+
1 * O	-6.50	-17.50	6.00	-5.86	-14.10	0.00	0.010	2	-	+	-	+
1 * O	-6.50	17.50	6.00	-5.86	14.10	0.00	0.010	2	-	+	-	+
1 * O	7.40	-17.50	6.00	7.87	-14.07	0.00	0.010	3	-	-	+	+
1 * O	7.40	17.50	6.00	7.87	14.07	0.00	0.010	3	-	-	+	+
1 * O	-7.40	-17.50	6.00	-7.91	-14.07	0.00	0.010	4	+	-	-	+
1 * O	-7.40	17.50	6.00	-7.91	14.07	0.00	0.010	4	+	-	-	+
1 * O	6.60	-17.50	6.00	5.87	-14.11	0.00	0.010	5	-	+	-	+
1 * O	6.60	17.50	6.00	5.87	14.11	0.00	0.010	5	-	+	-	+
1 * O	23.50	-12.00	6.00	19.33	-12.51	0.00	0.015	6	-	-	+	+
1 * O	23.50	12.00	6.00	19.33	12.51	0.00	0.015	6	-	-	+	+

Including Aiming Angles:

Qty and Code	Position			Aiming Angles			ULR	Arr.	Switching Modes			
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0			1	2	3	4
1 * O	-23.03	-0.06	6.00	0.0	35.0	0.0	0.015	0	+	-	-	+
1 * O	-7.46	0.04	6.00	-180.0	35.0	0.0	0.015	0	+	-	-	+
1 * O	-6.90	0.02	6.00	0.0	35.0	0.0	0.015	0	-	+	-	+
1 * O	6.60	0.02	6.00	180.0	35.0	-0.0	0.015	0	-	+	-	+
1 * O	7.28	0.02	6.00	0.0	35.0	0.0	0.015	0	-	-	+	+
1 * O	23.34	0.07	6.00	180.0	35.0	0.0	0.015	0	-	-	+	+
1 * O	-23.00	-12.00	6.00	-7.0	35.0	0.0	0.015	1	+	-	-	+
1 * O	-23.00	12.00	6.00	7.0	35.0	-0.0	0.015	1	+	-	-	+
1 * O	-6.50	-17.50	6.00	79.3	30.0	0.0	0.010	2	-	+	-	+
1 * O	-6.50	17.50	6.00	-79.3	30.0	-0.0	0.010	2	-	+	-	+
1 * O	7.40	-17.50	6.00	82.2	30.0	0.0	0.010	3	-	-	+	+
1 * O	7.40	17.50	6.00	-82.2	30.0	-0.0	0.010	3	-	-	+	+
1 * O	-7.40	-17.50	6.00	98.5	30.0	0.0	0.010	4	+	-	-	+
1 * O	-7.40	17.50	6.00	-98.5	30.0	-0.0	0.010	4	+	-	-	+
1 * O	6.60	-17.50	6.00	102.1	30.0	0.0	0.010	5	-	+	-	+
1 * O	6.60	17.50	6.00	-102.1	30.0	-0.0	0.010	5	-	+	-	+
1 * O	23.50	-12.00	6.00	-173.0	35.0	0.0	0.015	6	-	-	+	+
1 * O	23.50	12.00	6.00	173.0	35.0	-0.0	0.015	6	-	-	+	+