

Alkrington T C - R1

2no Tennis Courts 7m BVP518 A55 LO

Project code: 0400895626, 6018329

Date: 24-01-2025

Designer: LiAS UK & I - Steve Johnston

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.

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1. Project Description

1.1 Description

Courts 4 & 5 are new to lighting and therefore need to be approved by planning. This court uses 7m columns lit from sides Centre columns used for both Courts Fittings also use Internal Louvres (LO).

8 No BVP518 IN T45 1xLED1110-4S/740 E3/D4I A55-NB LO

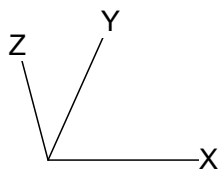
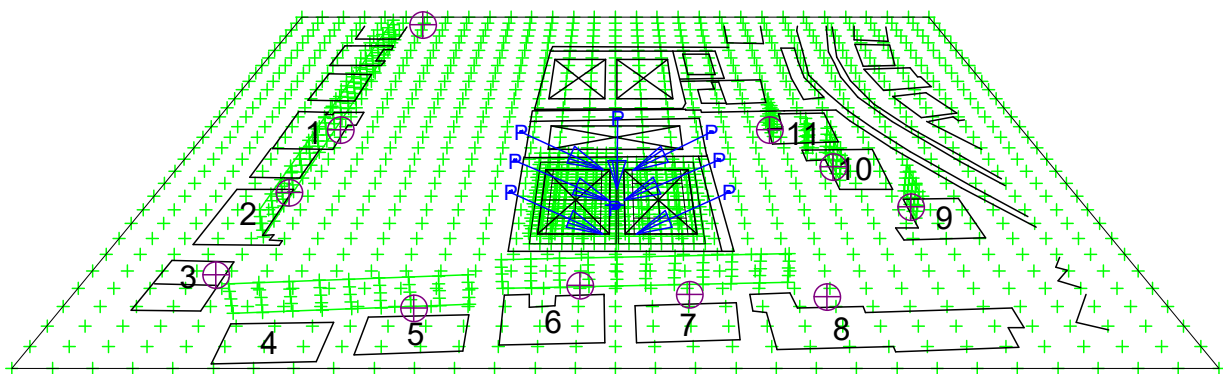
NB optic is compromise for best spill and performance on court when using fittings with LO Louvre

Environmental Zone for spill is considered to be between E3 (10 lux) & E4 (25 lux Max). Ev grids added to properties around the courts to measure light spill through windows from installation @ 1.0 MF (worst case when new).

Observers placed outside these prperties to measure maximum intensity of installation at these positions. Observers are 1.5m above ground.

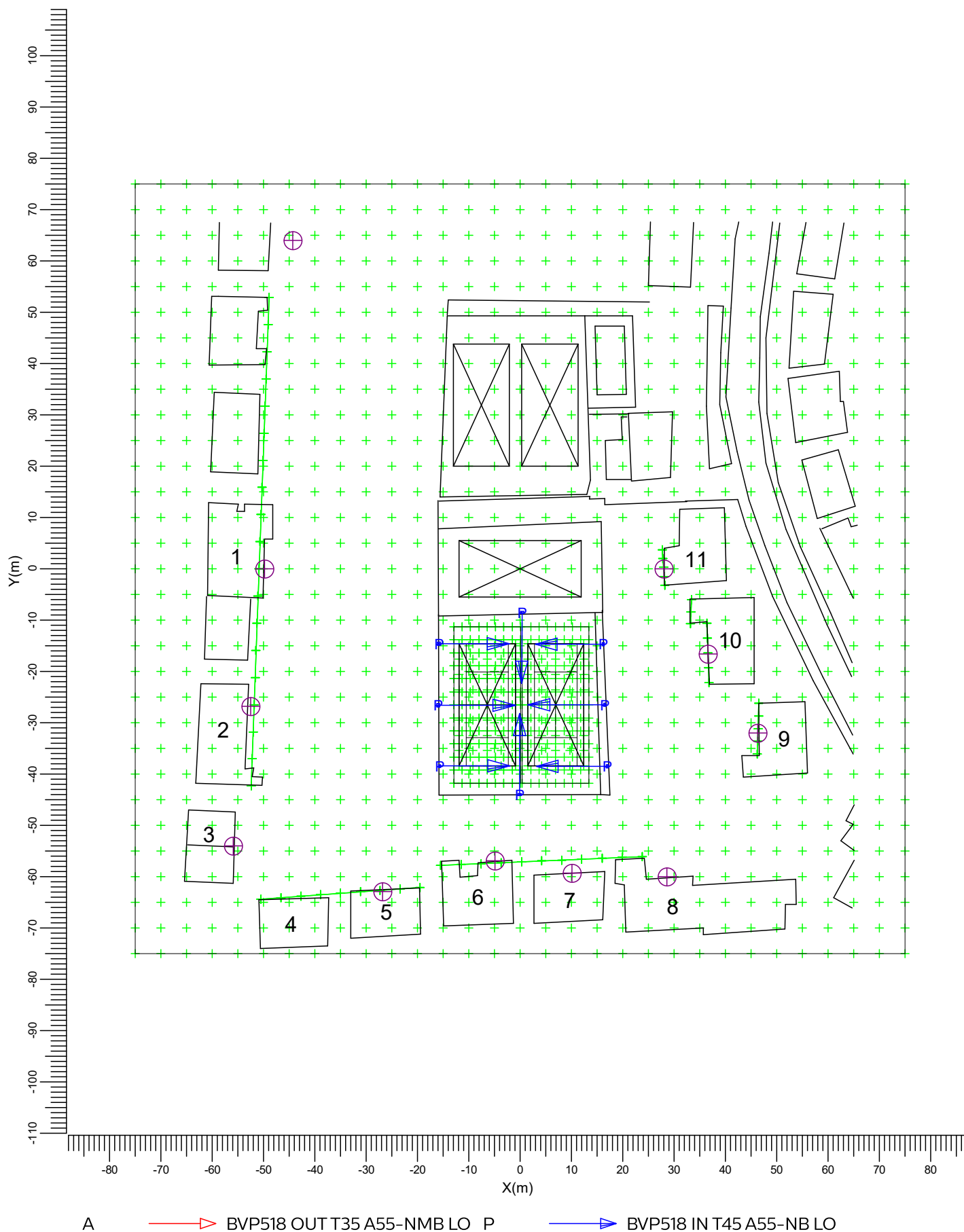
All except 1 house have Max Spill below 10 lux. Centre house south side is very has worst spill, where Max spill here is 2.35 lux Max

1.2 3-D Project Overview



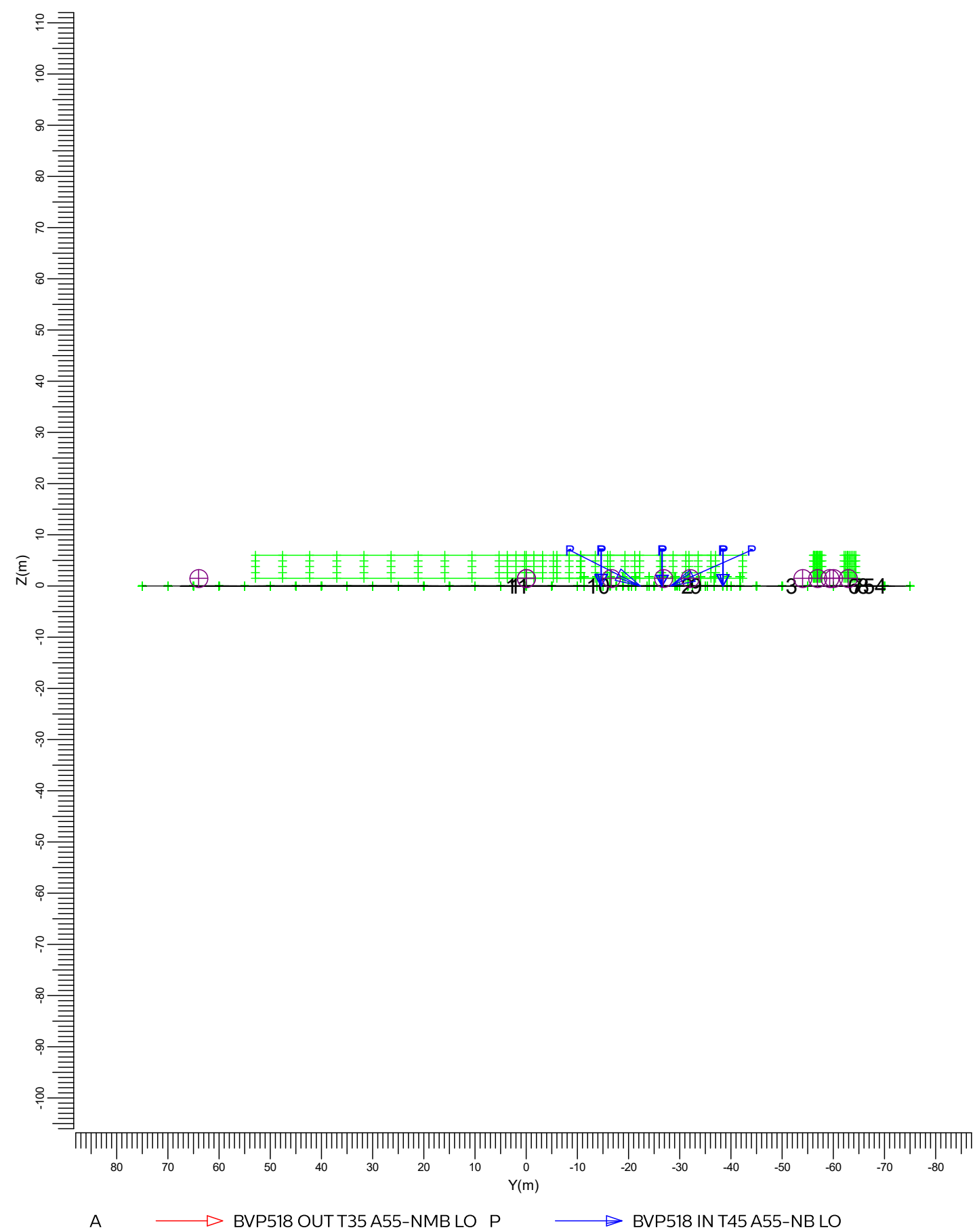
A → BVP518 OUT T35 A55-NMB LO P → BVP518 IN T45 A55-NB LO

1.3 Top Project Overview



Scale
1:1000

1.4 Left Project Overview



Scale
1:1000

2. Summary

2.1 Observer Information

Code	Observer	Position		
		X (m)	Y (m)	Z (m)
Aa	Obs 1	-49.80	-0.00	1.50
Bb	Obs 2	-52.50	-26.80	1.50
Cc	Obs 3	-55.90	-54.00	1.50
Dd	Obs 4	-44.34	64.00	1.50
Ee	Obs 5	-26.80	-62.90	1.50
Ff	Obs 6	-4.88	-56.90	1.50
Gg	Obs 7	10.09	-59.28	1.50
Hh	Obs 8	28.63	-59.96	1.50
Ii	Obs 9	46.32	-32.00	1.50
Jj	Obs 10	36.60	-16.60	1.50
Kk	Obs 11	27.95	-0.00	1.50

2.2 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
P	8	BVP518 IN T45 A55-NB LO	1 * LED1110-4S/740	606.5	1 * 111000

The total installed power: 4.85 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code	Power (kWatt)
	P	
Tennis Court 1	0	0.00
Tennis Court 2	0	0.00
Tennis Court 3	0	0.00
Tennis Court 4	5	3.03
Tennis Court 5	5	3.03
Spill Lighting	8	4.85

2.3 Calculation Results

Switching Modes:

Code	Switching Mode	Maintenance factor
1	Tennis Court 1	0.95
2	Tennis Court 2	0.95
3	Tennis Court 3	0.95
4	Tennis Court 4	0.95
5	Tennis Court 5	0.95
6	Spill Lighting	1.00

(II)luminance Calculations:

Calculation	Switching Mode	Type	Unit	Ave	Min	Max	Min/Ave	Min/Max
Tennis PPA 4	4	Surface Illuminance	lux	448	325	657	0.73	0.49
Tennis TPA 4	4	Surface Illuminance	lux	429	293	623	0.68	0.47
Tennis PPA 5	5	Surface Illuminance	lux	441	315	642	0.71	0.49
Tennis TPA 5	5	Surface Illuminance	lux	423	272	647	0.64	0.42

Calculation	Switching Mode	Type	Unit	Ave	Min	Max Min/AveMin/Max
Ev Houses West	6	Surface Illuminance	lux			0.40
Ev Houses S/W	6	Surface Illuminance	lux			0.39
Ev Houses Sth Centre	6	Surface Illuminance	lux			2.35
Ev East Top East	6	Surface Illuminance	lux			0.69
Ev East Mid Hse out	6	Surface Illuminance	lux			1.08
Ev East Mid Hse In	6	Surface Illuminance	lux			1.18
Ev East Bot Hse	6	Surface Illuminance	lux			0.57
Spill Lighting	6	Surface Illuminance	lux			

Glare Rating for Grid of Observers:

Calculation	Switching Mode	Observer Grid	Reference Grid	Reflectance	GR-Max
GR Max TPA 4 @ 1.75m	6	Tennis TPA 4 @ 1.75m	Tennis TPA 4	0.25	48.1

Obtrusive Light Calculations:

Switching Mode	Observer Code	Luminaire Code	Position			Aiming Angles			Maximum Intensity (cd)
			X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	
6	Aa	P	-0.10	-43.96	7.00	90.00	66.00	0.00	193
6	Bb	P	16.49	-26.47	7.00	180.00	65.00	0.00	954
6	Cc	P	16.96	-38.49	7.00	180.00	63.00	0.00	114
6	Dd	P	-0.10	-43.96	7.00	90.00	66.00	0.00	86
6	Ee	P	16.49	-26.47	7.00	180.00	65.00	0.00	191
6	Ff	P	0.39	-8.53	7.00	-90.54	63.00	0.00	638
6	Gg	P	-15.72	-38.43	7.00	0.00	63.00	0.00	313
6	Hh	P	-15.95	-26.60	7.00	0.00	65.00	0.00	196
6	Ii	P	-15.95	-26.60	7.00	0.00	65.00	0.00	723
6	Jj	P	-15.83	-14.59	7.00	0.10	63.00	0.00	809
6	Kk	P	-0.10	-43.96	7.00	90.00	66.00	0.00	239

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

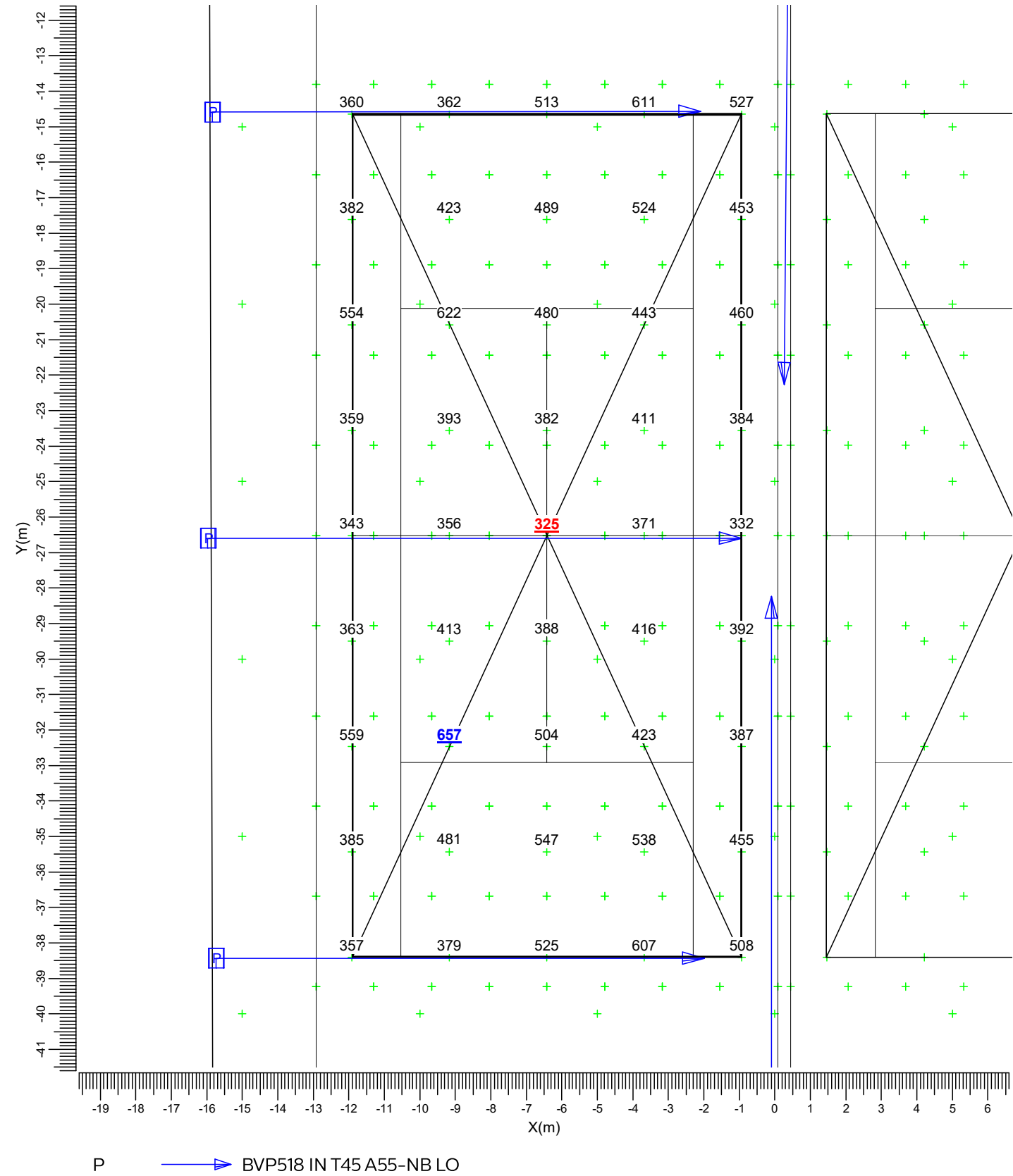
3. Calculation Results

3.1 Tennis PPA 4: Graphical Table

Tennis Court 4

Grid : Tennis PPA 4 at Z = -0.00 m

Calculation : Surface Illuminance (lux)

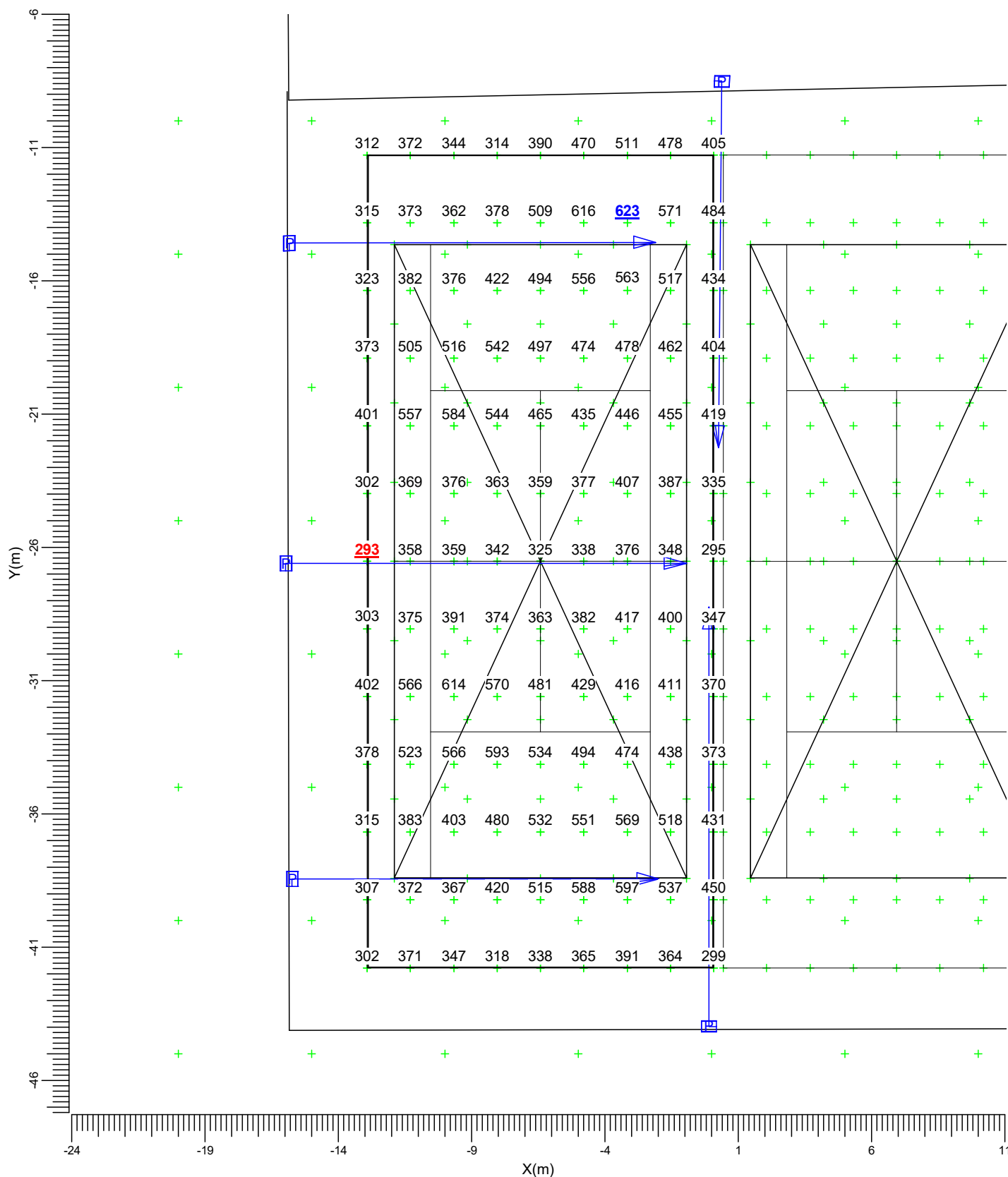


Average	Minimum	Maximum	Min/Ave	Min/Max	Project maintenance factor	Scale
448	325	657	0.73	0.49	0.95	1:150

3.2 Tennis TPA 4: Graphical Table

Tennis Court 4

Grid : Tennis TPA 4 at Z = -0.00 m
Calculation : Surface Illuminance (lux)



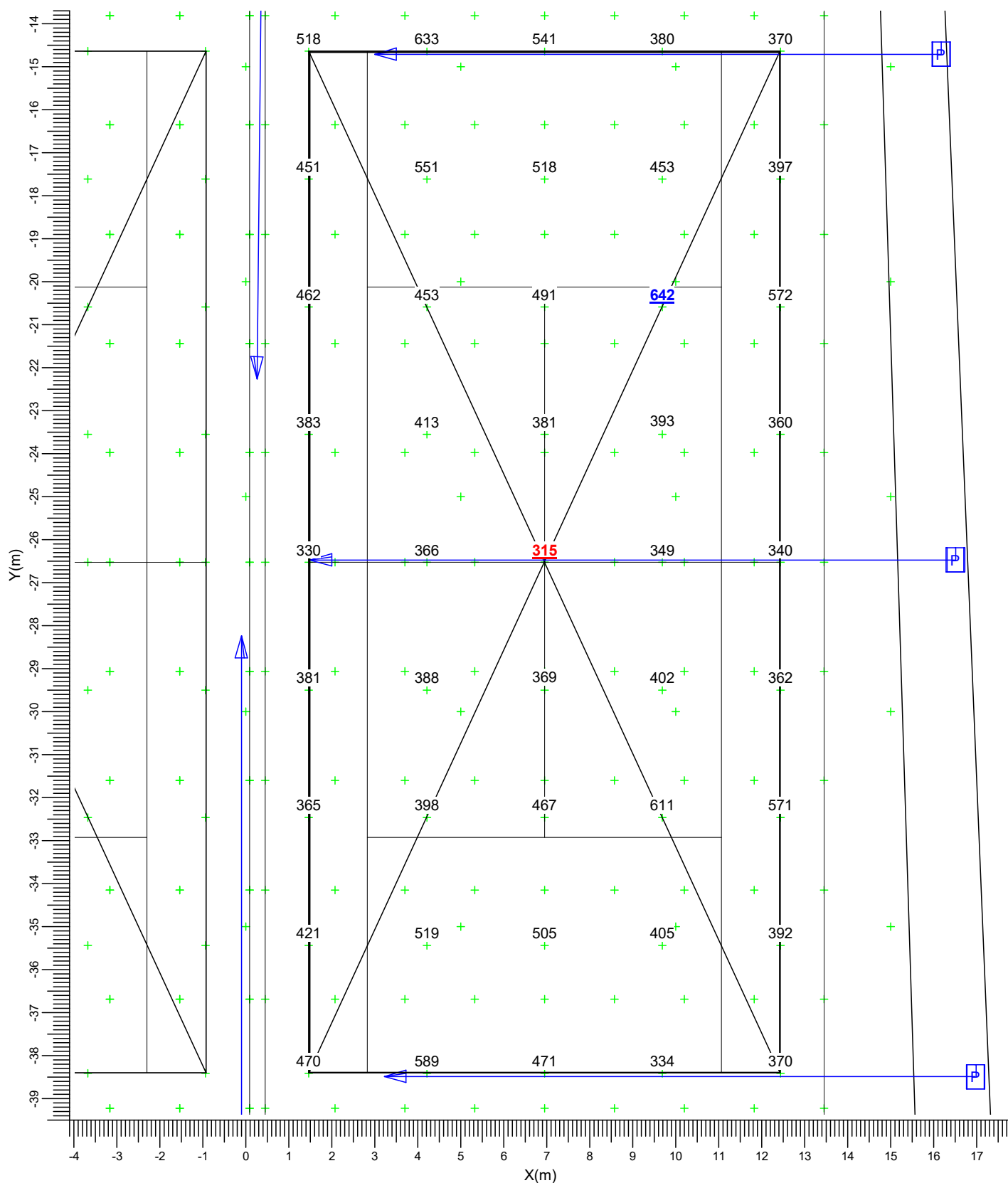
P — BVP518 IN T45 A55-NB LO

Average 429	Minimum 293	Maximum 623	Min/Ave 0.68	Min/Max 0.47	Project maintenance factor 0.95	Scale 1:200
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3.3 Tennis PPA 5: Graphical Table

Tennis Court 5

Grid : Tennis PPA 5 at Z = -0.00 m
Calculation : Surface Illuminance (lux)



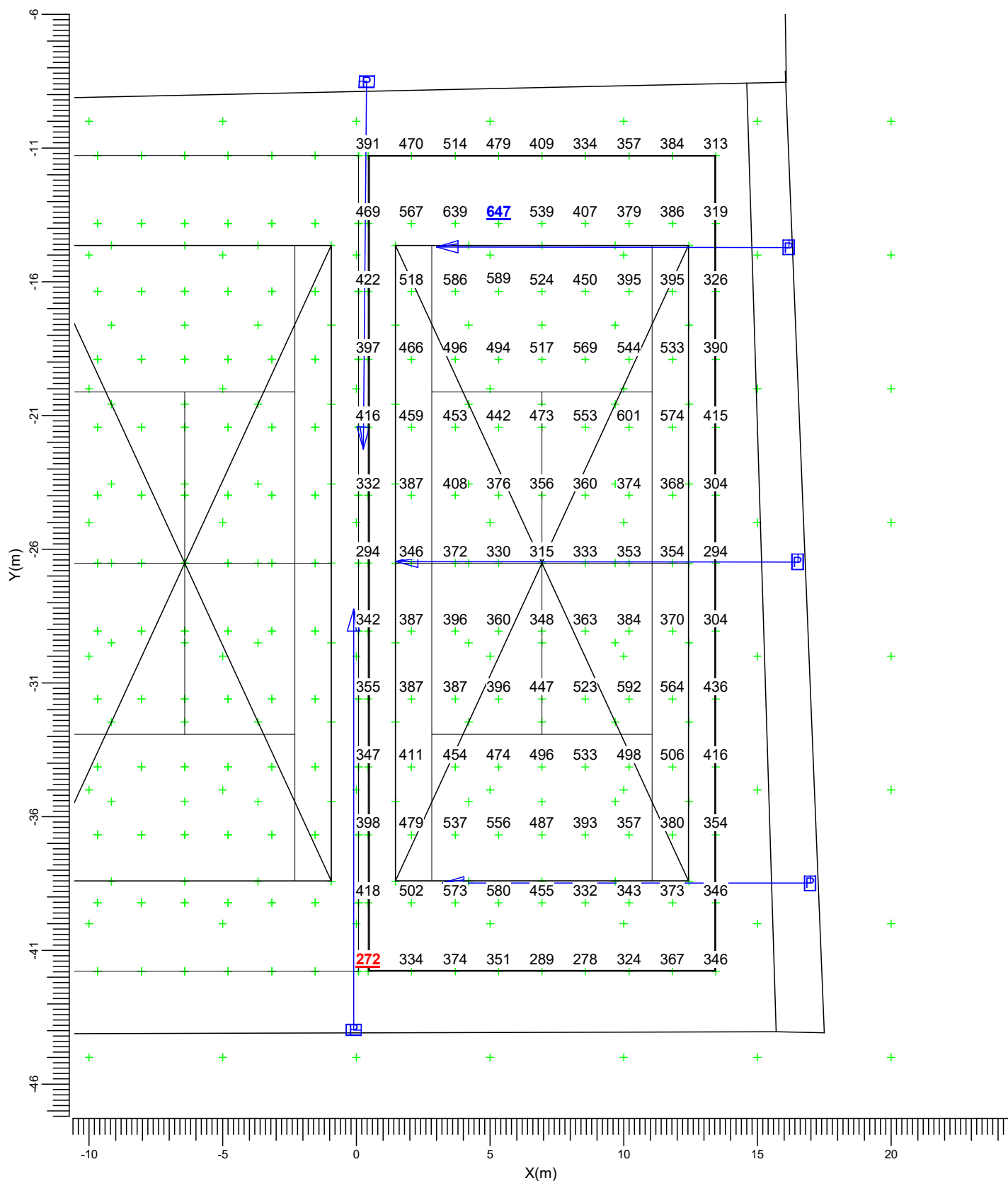
P BVP518 IN T45 A55-NB LO

Average 441	Minimum 315	Maximum 642	Min/Ave 0.71	Min/Max 0.49	Project maintenance factor 0.95	Scale 1:125
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3.4 Tennis TPA 5: Graphical Table

Tennis Court 5

Grid : Tennis TPA 5 at Z = -0.00 m
Calculation : Surface Illuminance (lux)



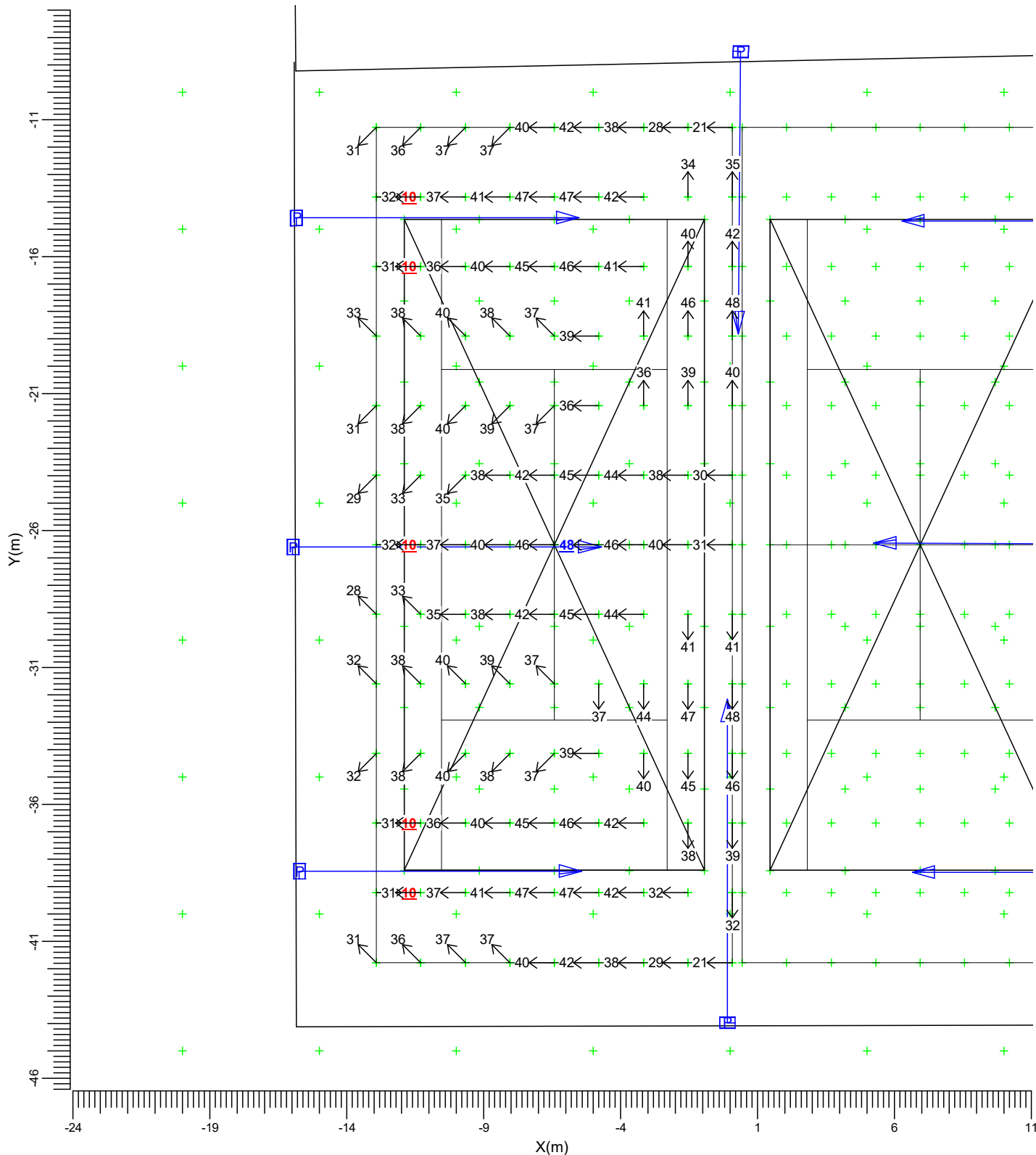
P ———▶ BVP518 IN T45 A55-NB LO

Average	Minimum	Maximum	Min/Ave	Min/Max	Project maintenance factor	Scale
423	272	647	0.64	0.42	0.95	1:200

3.5 GR Max TPA 4 @ 1.75m: Graphical Table

Spill Lighting

Grid of Observers : Tennis TPA 4 @ 1.75m
Calculation : Glare Rating
Grid for Background Luminance: Tennis TPA 4 (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



A ———▶ BVP518 OUT T35 A55-NMB LO P ———▶ BVP518 IN T45 A55-NB LO

Maximum
48.1

Project maintenance factor
1.00

Scale
1:200

3.6 Ev Houses West: Iso Contour

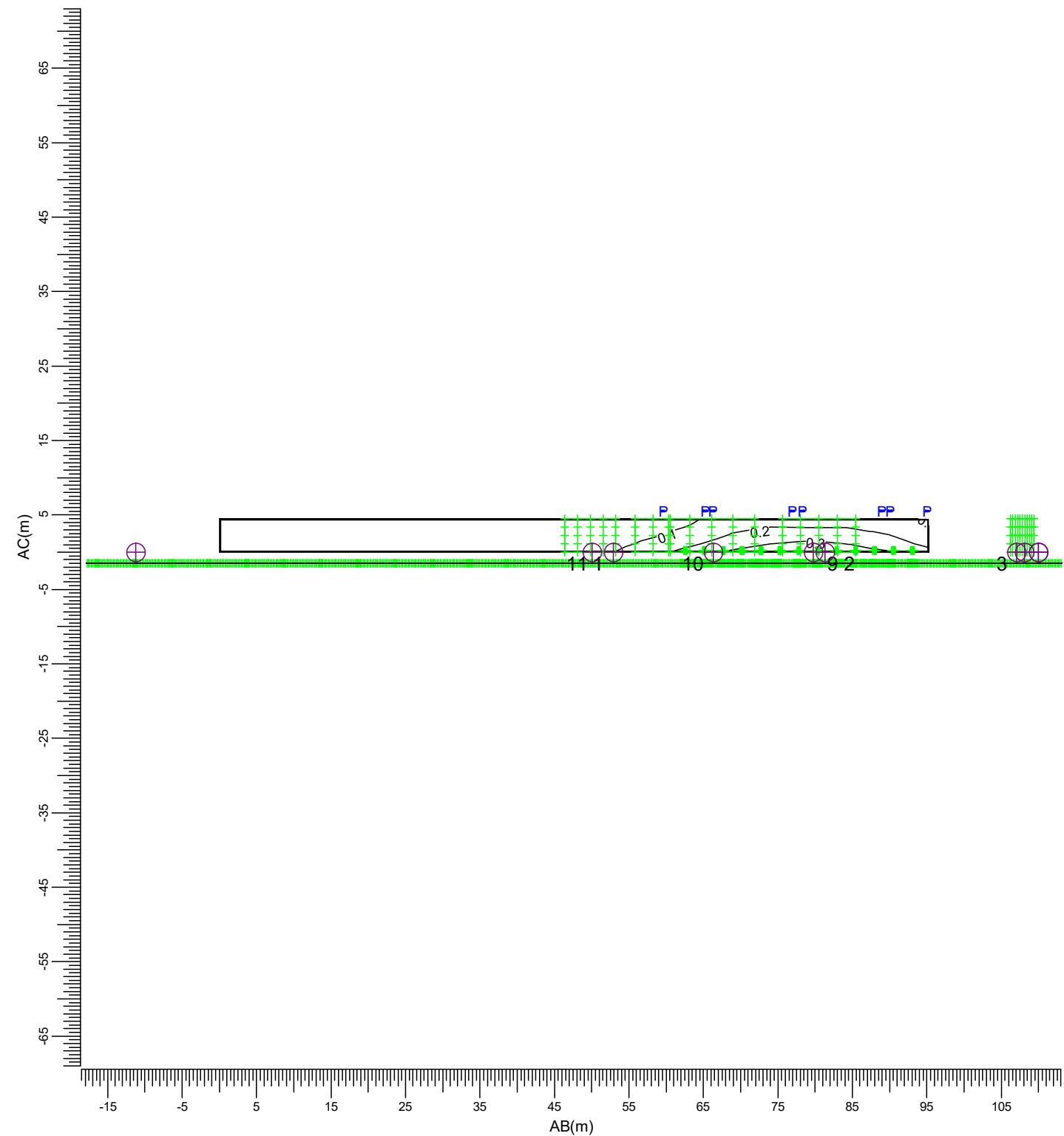
Spill Lighting

Grid

Calculation

: Ev Houses West

: Surface Illuminance (lux)



(-48.94, 52.89, 6.00)

(-48.94, 52.89, 1.50)

C-----D (-52.42, -42.33, 6.00)

A-----B (-52.42, -42.33, 1.50)

A : BVP518 OUT T35 A55-NMB LO

P : BVP518 IN T45 A55-NB LO

Maximum
0.40

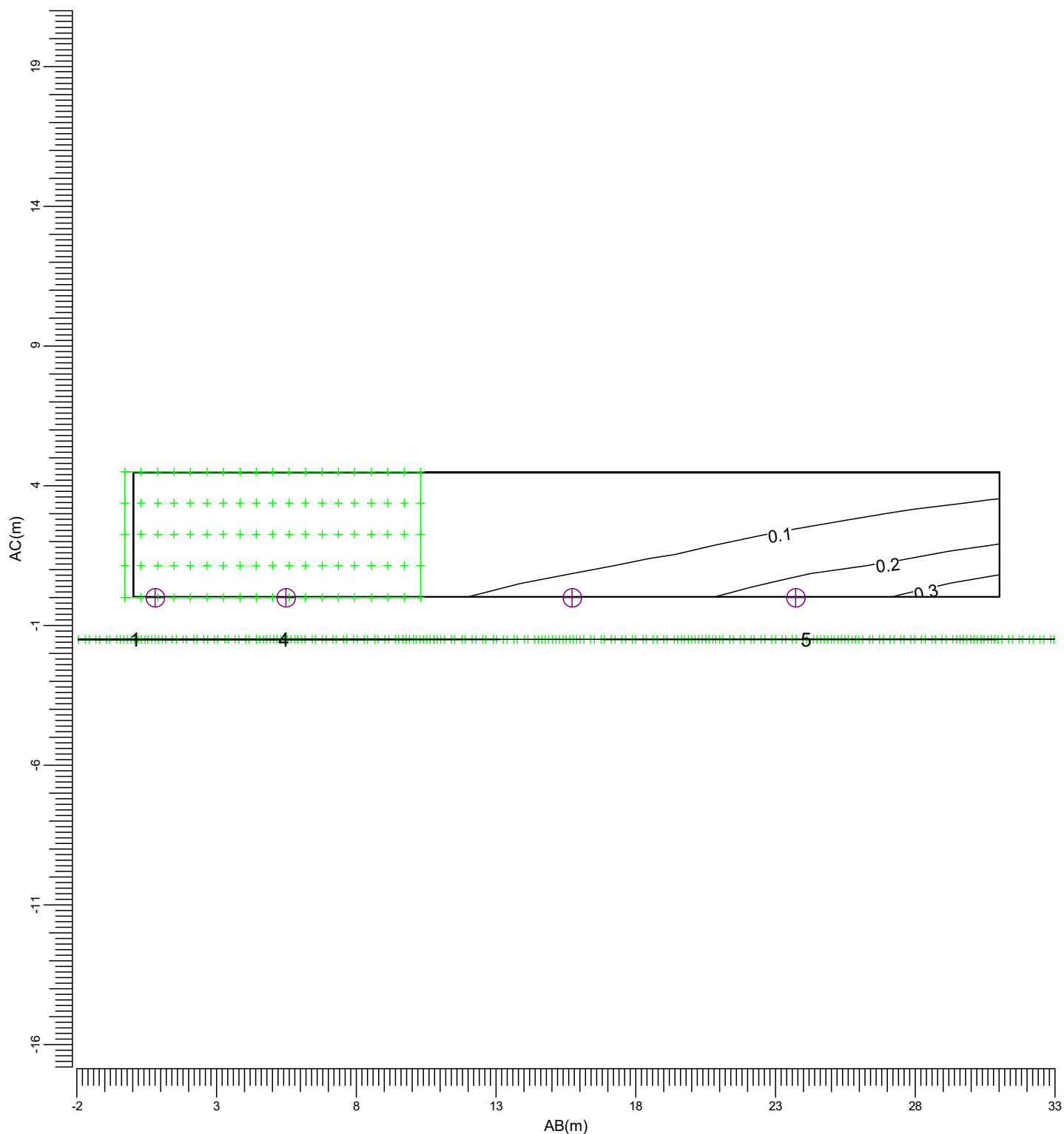
Project maintenance factor
1.00

Scale
1:750

3.7 Ev Houses S/W: Iso Contour

Spill Lighting

Grid : Ev Houses S/W
Calculation : Surface Illuminance (lux)



(-50.49, -64.39, 6.00) C-----D (-19.52, -62.07, 6.00)
| |
(-50.49, -64.39, 1.50) A-----B (-19.52, -62.07, 1.50)

A : BVP518 OUT T35 A55-NMB LO

P : BVP518 IN T45 A55-NB LO

Maximum
0.39

Project maintenance factor
1.00

Scale
1:200

3.8 Ev Houses Sth Centre: Iso Contour

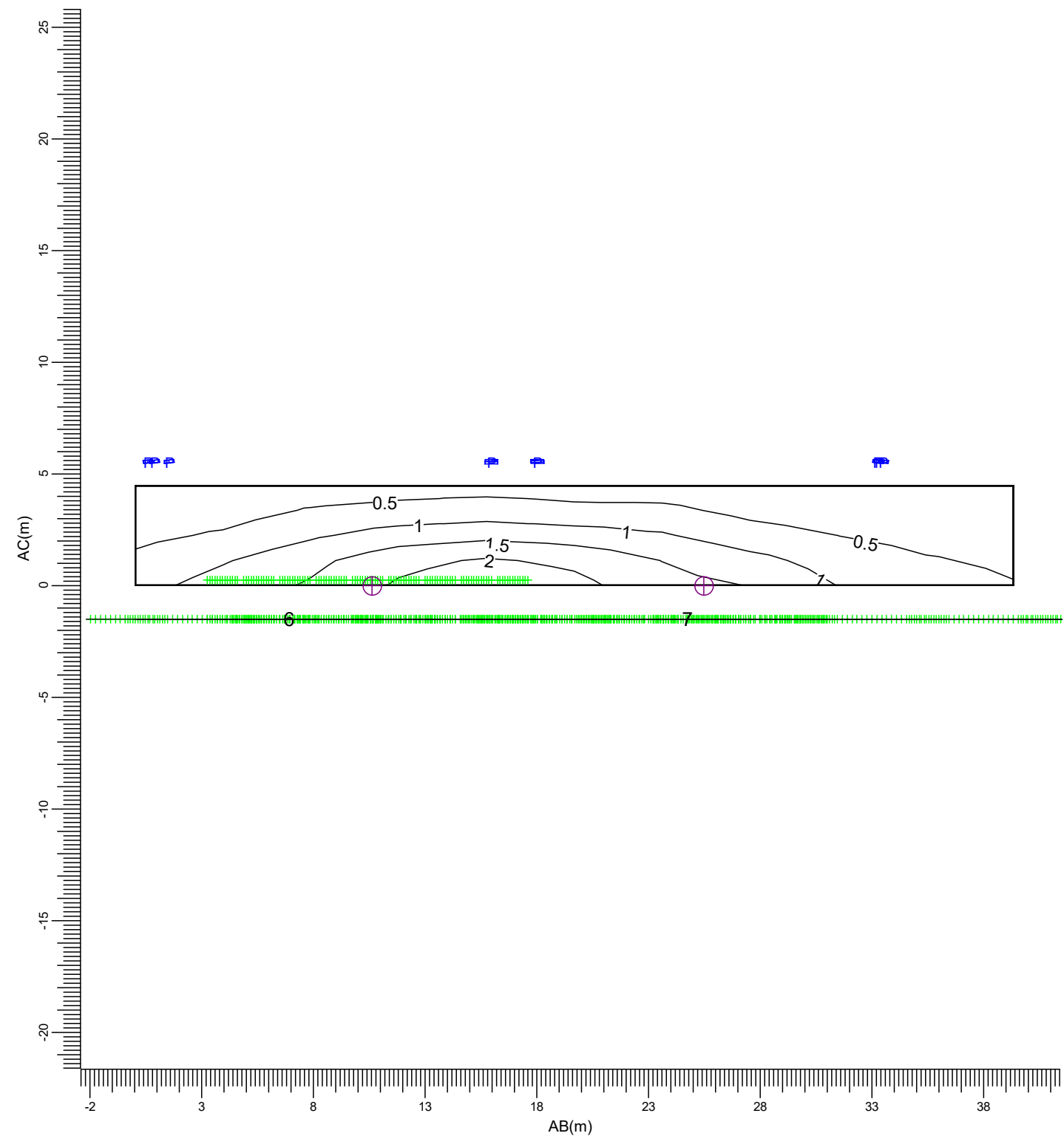
Spill Lighting

Grid

Calculation

: Ev Houses Sth Centre

: Surface Illuminance (lux)



(-15.46, -57.81, 6.00)

(-15.46, -57.81, 1.50)

C-----D (23.83, -56.07, 6.00)

A-----B (23.83, -56.07, 1.50)

A: BVP518 OUT T35 A55-NMB LO

P: BVP518 IN T45 A55-NB LO

Maximum
2.35

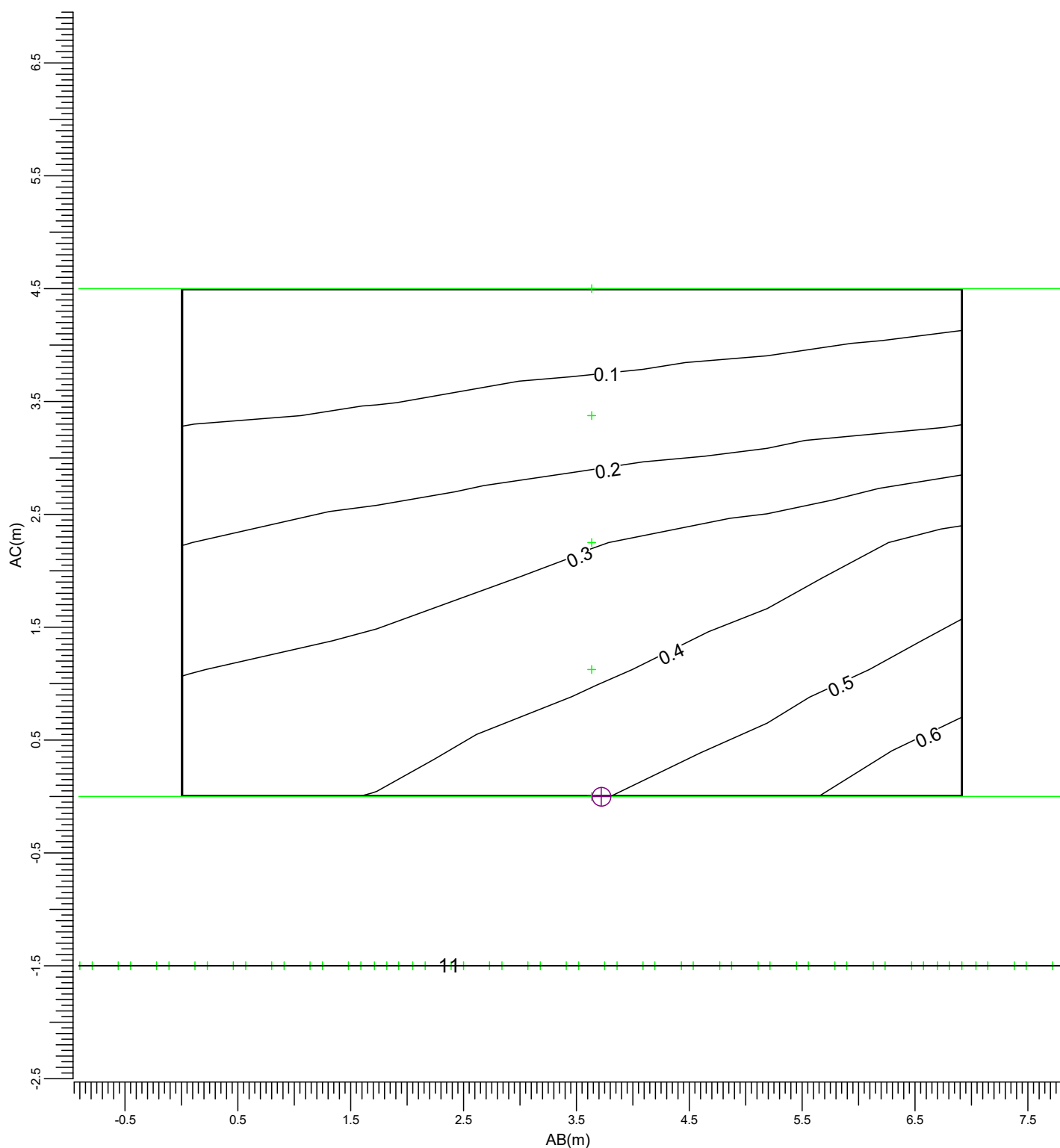
Project maintenance factor
1.00

Scale
1:250

3.9 Ev East Top East: Iso Contour

Spill Lighting

Grid : Ev East Top Hse
Calculation : Surface Illuminance (lux)



(27.73, 3.71, 6.00) C-----D (28.20, -3.19, 6.00)
(27.73, 3.71, 1.50) A-----B (28.20, -3.19, 1.50)

A : BVP518 OUT T35 A55-NMB LO

P : BVP518 IN T45 A55-NB LO

Maximum
0.69

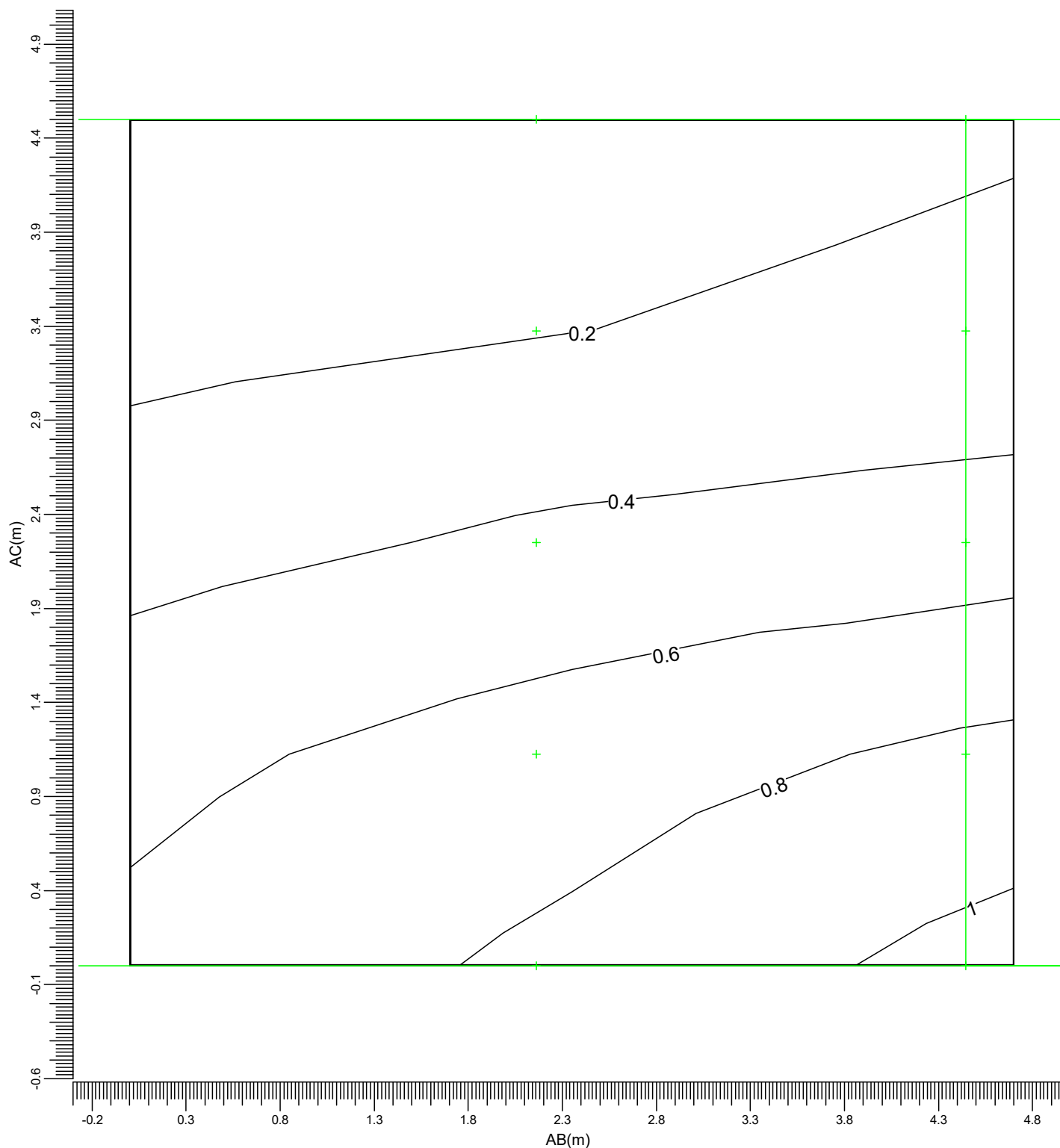
Project maintenance factor
1.00

Scale
1:50

3.10 Ev East Mid Hse out: Iso Contour

Spill Lighting

Grid : Ev East Mid Hse out
Calculation : Surface Illuminance (lux)



(33.38, -6.01, 6.00) C-----D (33.22, -10.71, 6.00)
| |
(33.38, -6.01, 1.50) A-----B (33.22, -10.71, 1.50)

A : BVP518 OUT T35 A55-NMB LO

P : BVP518 IN T45 A55-NB LO

Maximum
1.08

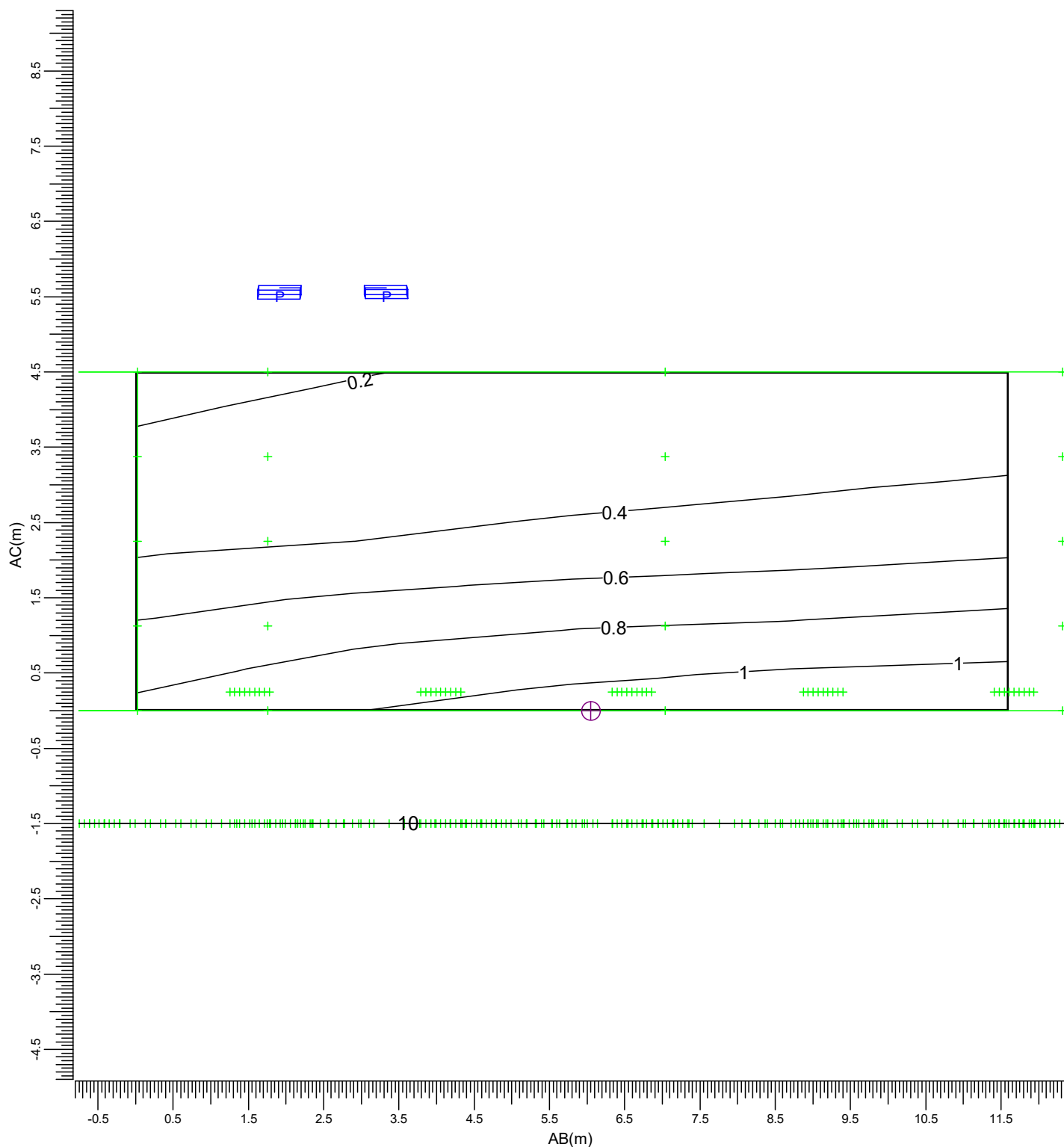
Project maintenance factor
1.00

Scale
1:30

3.11 Ev East Mid Hse In: Iso Contour

Spill Lighting

Grid : Ev East Mid Hse In
Calculation : Surface Illuminance (lux)



(36.35, -10.56, 6.00) C-----D (36.82, -22.15, 6.00)
| |
(36.35, -10.56, 1.50) A-----B (36.82, -22.15, 1.50)

A : BVP518 OUT T35 A55-NMB LO

P : BVP518 IN T45 A55-NB LO

Maximum
1.18

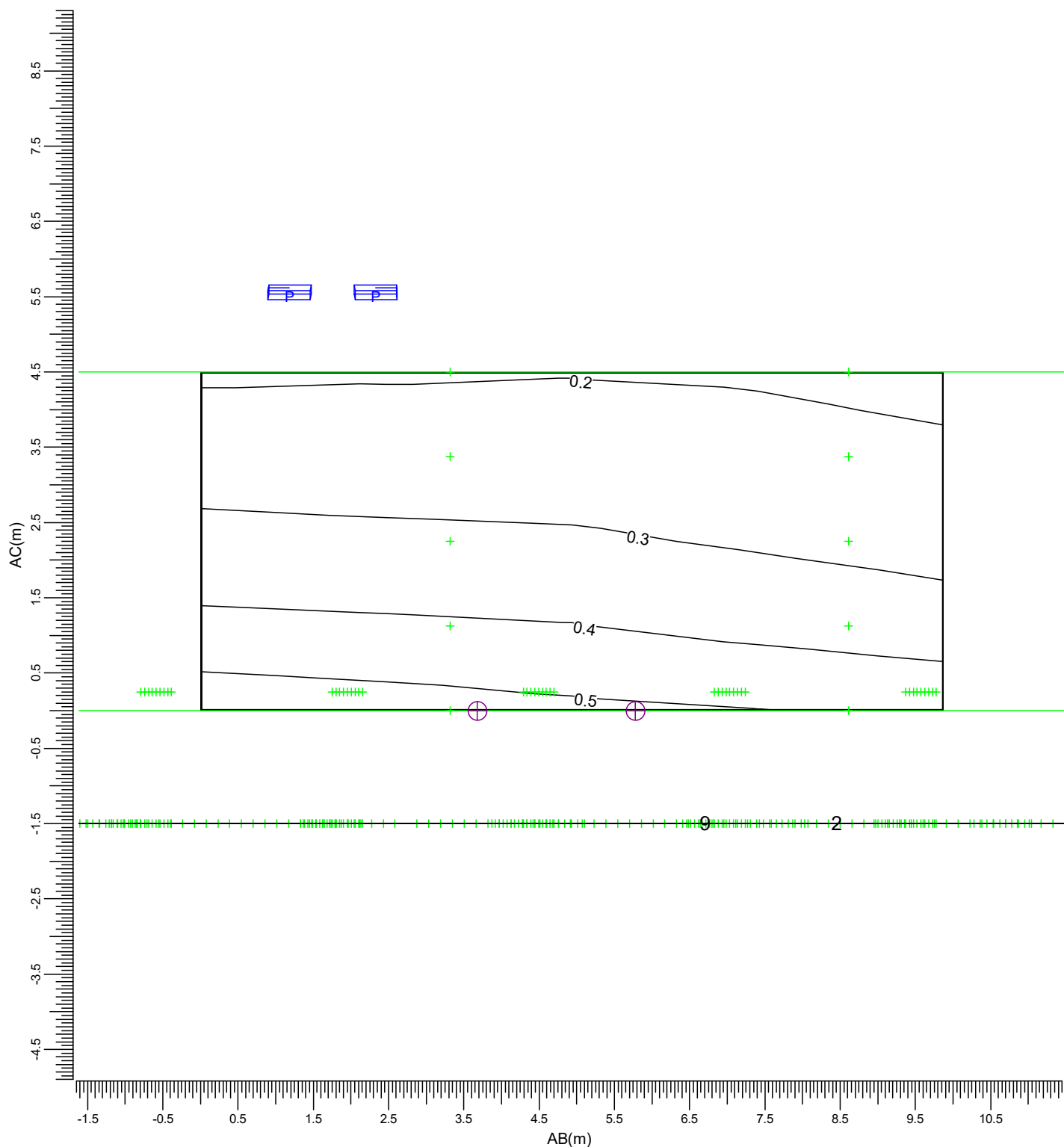
Project maintenance factor
1.00

Scale
1:75

3.12 Ev East Bot Hse: Iso Contour

Spill Lighting

Grid : Ev East Bot Hse
Calculation : Surface Illuminance (lux)



(46.54, -26.23, 6.00) C-----D (46.23, -36.10, 6.00)
| |
(46.54, -26.23, 1.50) A-----B (46.23, -36.10, 1.50)

A : BVP518 OUT T35 A55-NMB LO

P : BVP518 IN T45 A55-NB LO

Maximum
0.57

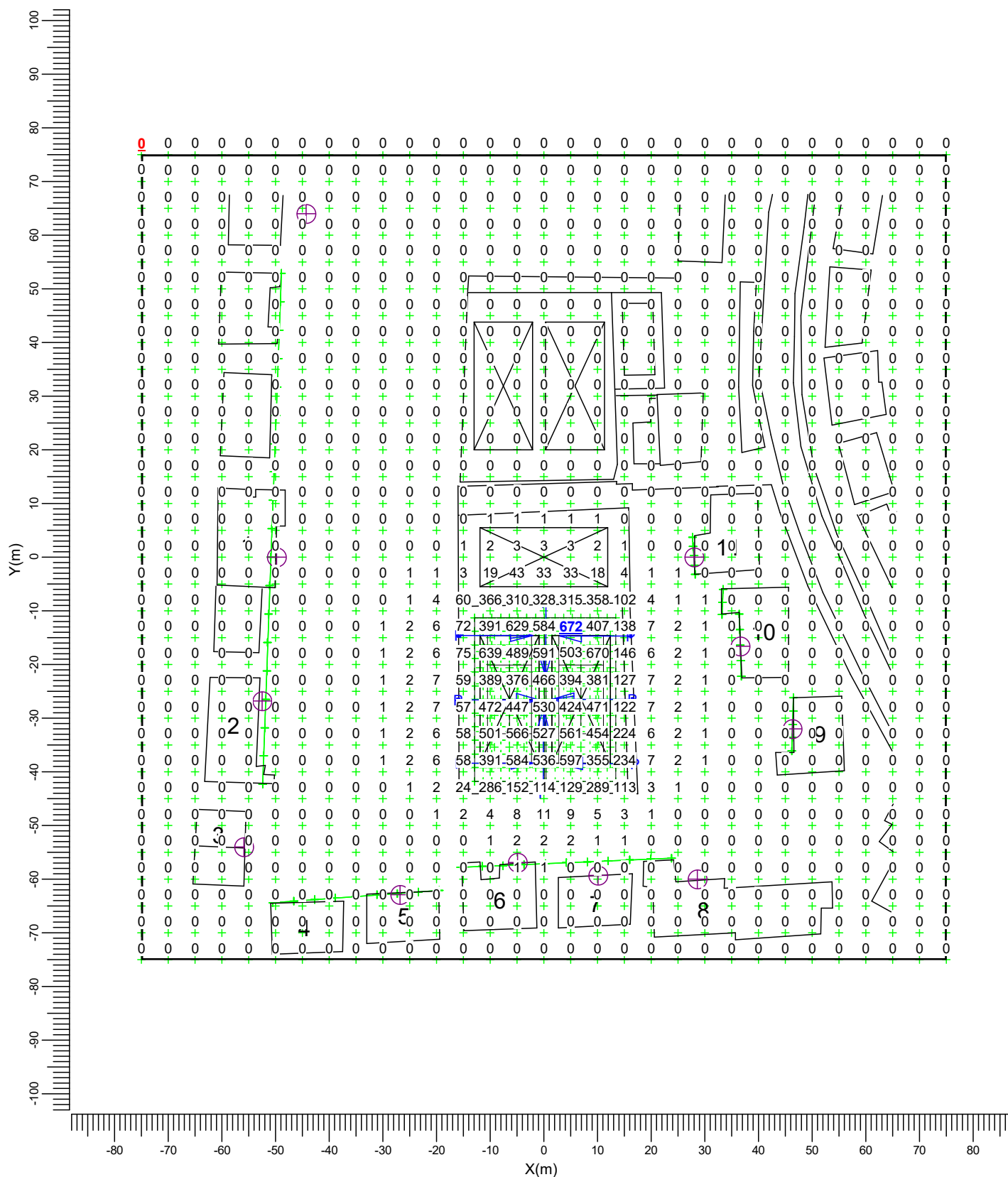
Project maintenance factor
1.00

Scale
1:75

3.13 Spill Lighting: Graphical Table

Spill Lighting

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



A → BVP518 OUT T35 A55-NMB LO P → BVP518 IN T45 A55-NB LO

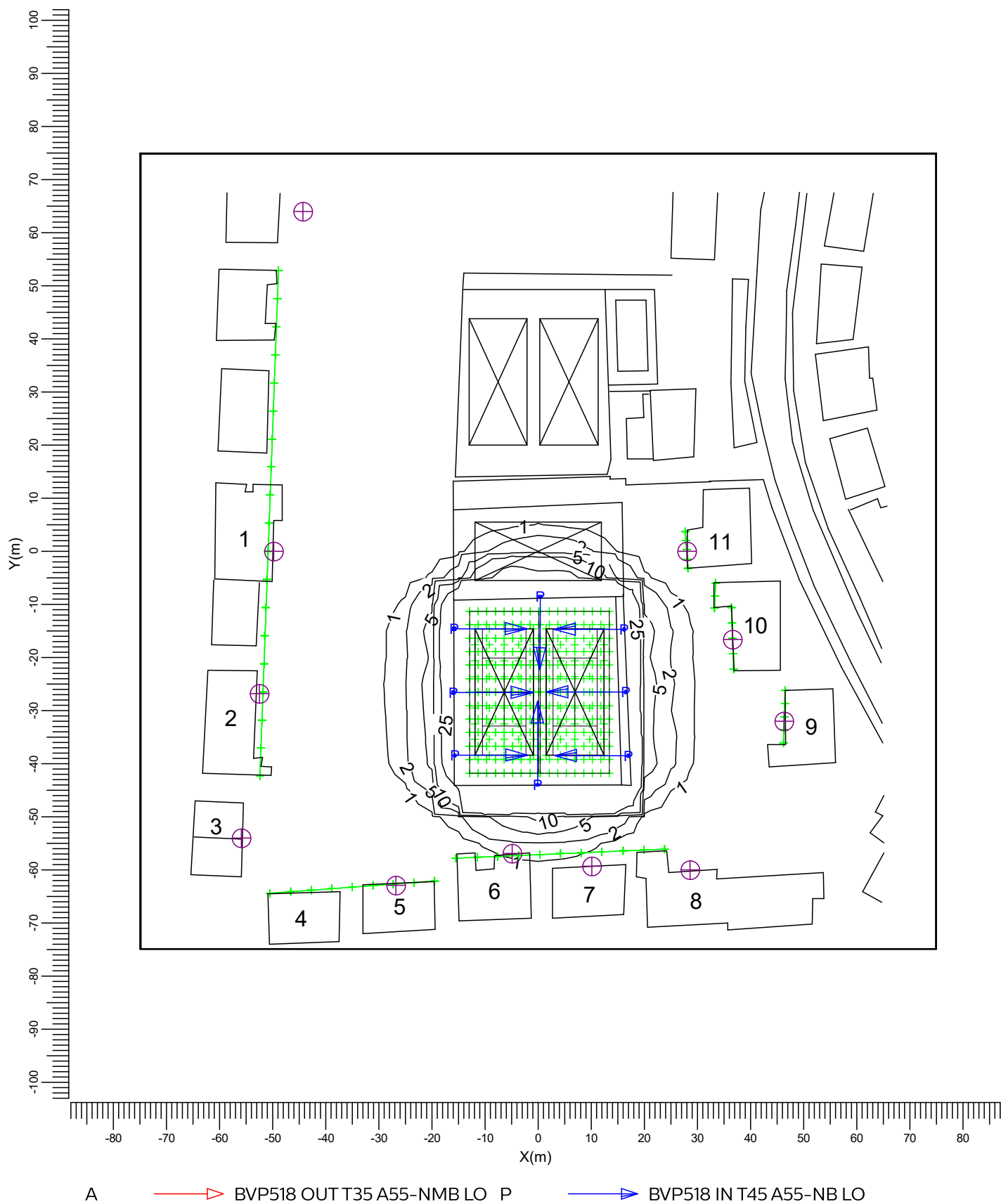
Project maintenance factor
1.00

Scale
1:1000

3.14 Spill Lighting: Iso Contour

Spill Lighting

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



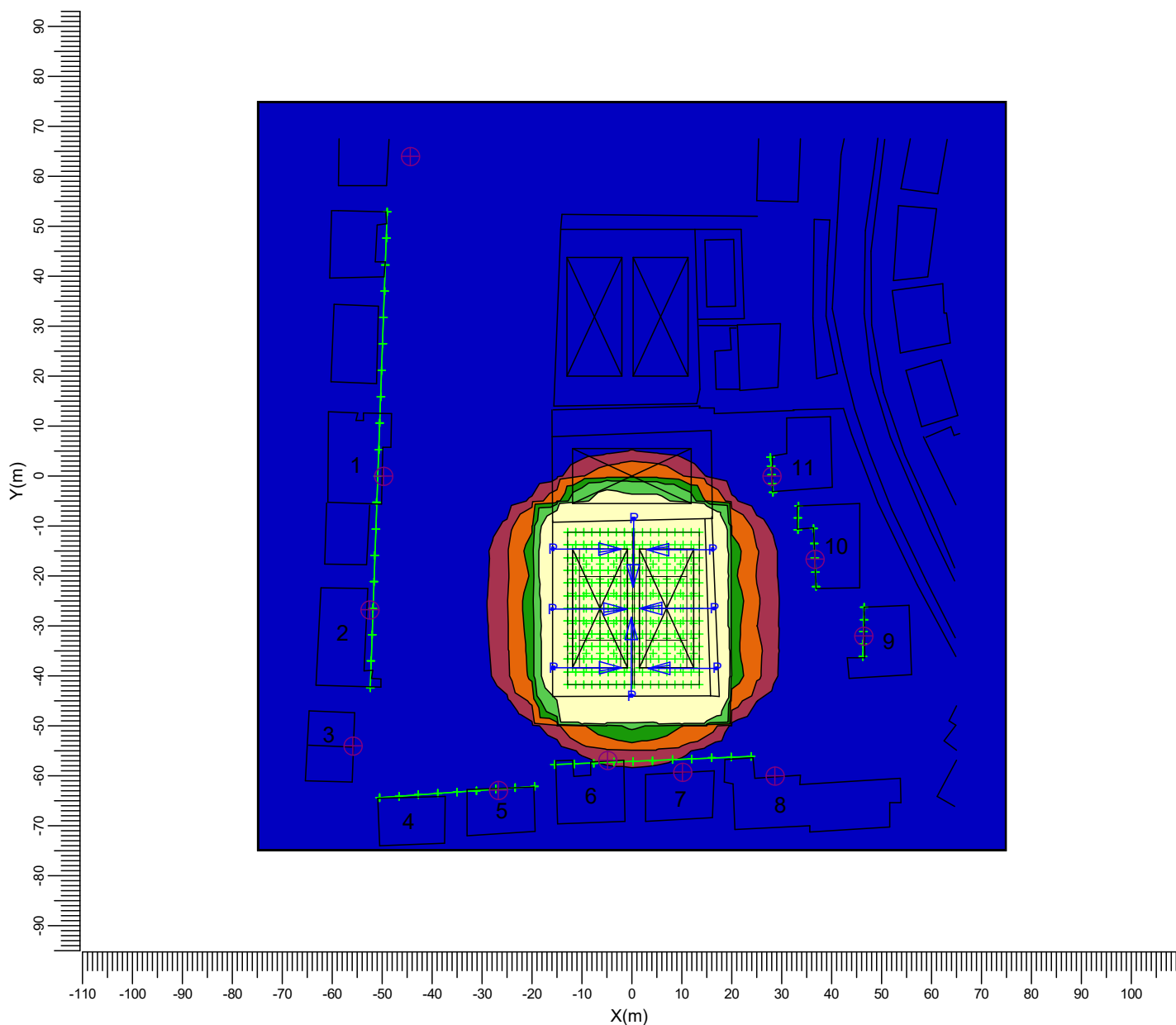
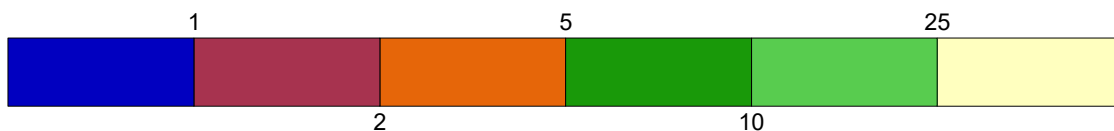
Project maintenance factor
1.00

Scale
1:1000

3.15 Spill Lighting: Filled Iso Contour

Spill Lighting

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



A → BVP518 OUT T35 A55-NMB LO P → BVP518 IN T45 A55-NB LO

Project maintenance factor
1.00

Scale
1:1250

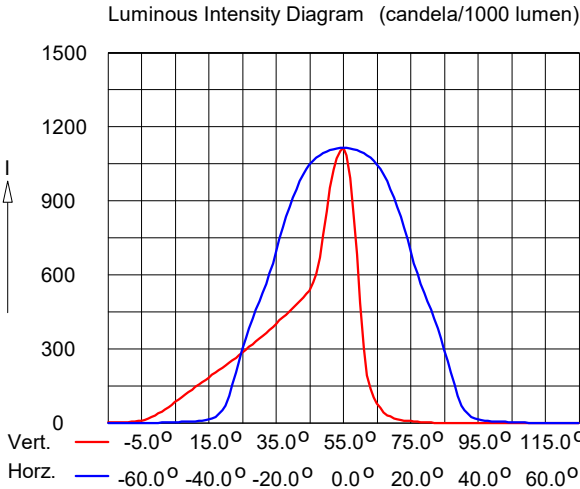
4. Luminaire Details

4.1 Project Luminaires

OptiVision LED gen3.5 2022
BVP518 IN T45 1xLED1110-4S/740/740 E3/D4I A55-NB LO

Light output ratios	
DLOR	: 0.57
ULOR	: 0.00
TLOR	: 0.57
Ballast	: E3/D4I
Lamp flux	: 111000 lm
Luminaire wattage	: 606.5 W
Measurement code	: LVM20482U1

Note: Luminaire data not from database.



5. Installation Data

5.1 Legends

Project Luminaires:				
Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
P	8	BVP518 IN T45 A55-NB LO	1 * LED1110-4S/740	1 * 111000

Switching Modes:	
Code	Switching Mode
1	Tennis Court 1
2	Tennis Court 2
3	Tennis Court 3
4	Tennis Court 4
5	Tennis Court 5
6	Spill Lighting

5.2 Luminaire Positioning and Orientation

Including Aiming Points:

Qty and Code	Position			Aiming Points			ULR	Switching Modes					
	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)		1	2	3	4	5	6
1 * P	-15.95	-26.60	7.00	-0.94	-26.60	0.00	0.00	-	-	-	+	-	+
1 * P	-15.83	-14.59	7.00	-2.09	-14.56	0.00	0.00	-	-	-	+	-	+
1 * P	-15.72	-38.43	7.00	-1.98	-38.43	0.00	0.00	-	-	-	+	-	+
1 * P	-0.10	-43.96	7.00	-0.10	-28.24	0.00	0.00	-	-	-	+	+	+
1 * P	0.39	-8.53	7.00	0.26	-22.27	0.00	0.00	-	-	-	+	+	+
1 * P	16.16	-14.71	7.00	2.99	-14.71	0.00	0.00	-	-	-	-	+	+
1 * P	16.49	-26.47	7.00	1.48	-26.47	0.00	0.00	-	-	-	-	+	+
1 * P	16.96	-38.49	7.00	3.22	-38.49	0.00	0.00	-	-	-	-	+	+

Including Aiming Angles:

Qty and Code	Position			Aiming Angles			ULR	Switching Modes					
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0		1	2	3	4	5	6
1 * P	-15.95	-26.60	7.00	0.0	65.0	0.0	0.00	-	-	-	+	-	+
1 * P	-15.83	-14.59	7.00	0.1	63.0	0.0	0.00	-	-	-	+	-	+
1 * P	-15.72	-38.43	7.00	0.0	63.0	0.0	0.00	-	-	-	+	-	+
1 * P	-0.10	-43.96	7.00	90.0	66.0	0.0	0.00	-	-	-	+	+	+
1 * P	0.39	-8.53	7.00	-90.5	63.0	0.0	0.00	-	-	-	+	+	+
1 * P	16.16	-14.71	7.00	180.0	62.0	0.0	0.00	-	-	-	-	+	+
1 * P	16.49	-26.47	7.00	180.0	65.0	0.0	0.00	-	-	-	-	+	+
1 * P	16.96	-38.49	7.00	180.0	63.0	0.0	0.00	-	-	-	-	+	+