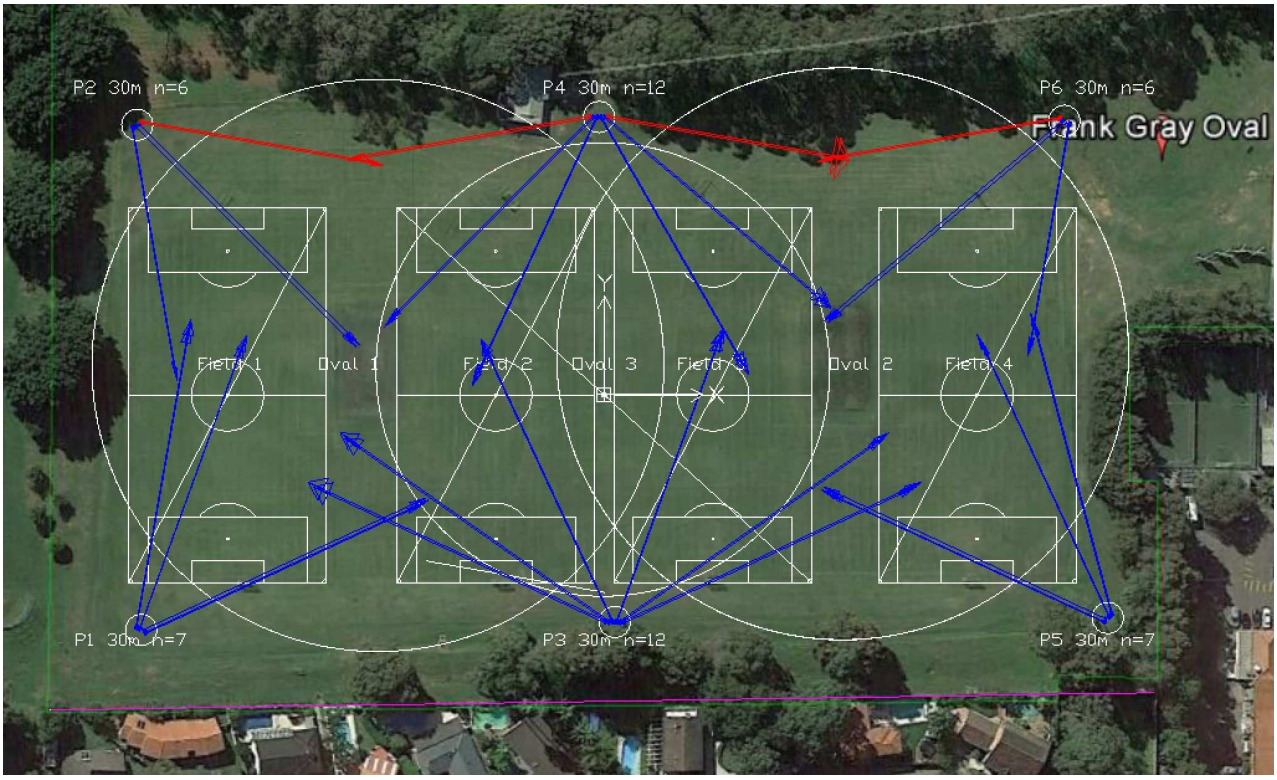
Frank Gray & Mike Pawley OVals

100 lux - LED

Project code: 18076-01
Date: 09-09-2018

Description: Rev A - Original - Concept for review



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

Dimensions have been taken from a pdf/satellite image,
subject to confirmation prior to installation/commissioing.
MH = 30 metres; the height above the playing surface to a single crossarm.

Glare Ratings (GR) are based on a diffuse playing surface reflectance of 25%.
GRmax <=50 for observers per Figure 6 AS 2560.2.3-2007 Football.

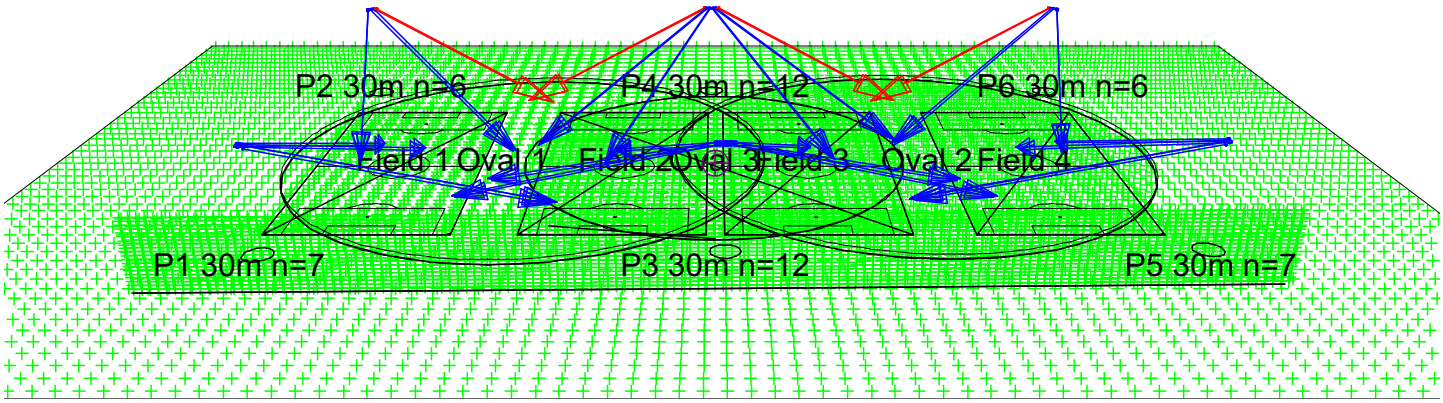
A maintenance factor of 0.86 has been allowed to apply to all luminaires.
A maintenance policy should be adopted to support the maintenance factor.
MF=1.0 is used to show obtrusive light inital values.

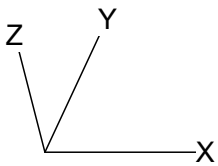
AS4282-1997 Obtrusive light assesment:
All luminaires on, direct flux only, no obstructions such as trees are included.
Maximum luminous intensity per luminaire = Level 1 control
(pre-curfew, medium/large area per Table 2.2),
Ev<=10 lux (measured at z = 1 to 20 m),
TI not calculated.

Philips OptiVision LED gen2 BVP525 50K 757 T30 IP66 3 module.
Weight=28 kg(remote driver 6 kg), SCx=0.31 (at 40° tilt).
Note trunnion depth is 30mm, longer bolts may required.
LT and LO versions use integral shields to mitigate obtrusive light.
Floodlight reference tilt (~Imax) is noted as "TILT90".
Subtract 30° from TILT90 to get the tilt of the visor.
All luminaires are tilted with visor at <=40°.
Floodlights should be spaced at least 95cm apart.
Driver rating: 230-400V +/-10% 50Hz.
Input Power = 1392 W, Run current: 415V=3.6A, 240V=6.2A
Refer to Mounting instructions for inrush current details.
Cable from driver to floodlight 6C+E 1000V (by others):
Length<25m use 1.5mm2, Length<=50m use 2.5mm2.
Tolerances on light flux: +/- 7%
Can be mounted over/under without modification/accessories,
(single cross-arm only, if two or more cross-arms
are required, then provision must be made for sufficient
offset to avoid the luminaires on the
lower arm/s shadowing those on the upper arm).

MF=0.86, from Rated useful life L94B10=15000 hrs,
and LMF=0.92 (dirt) from BS5489.1 Table B.1
(E1/2/3/4 MH>6m and 6 year clean)
Note: L80B10=50,000 hours, abrupt failure value (driver)=1.5%@15000 hrs.

1.2 3-D Project Overview

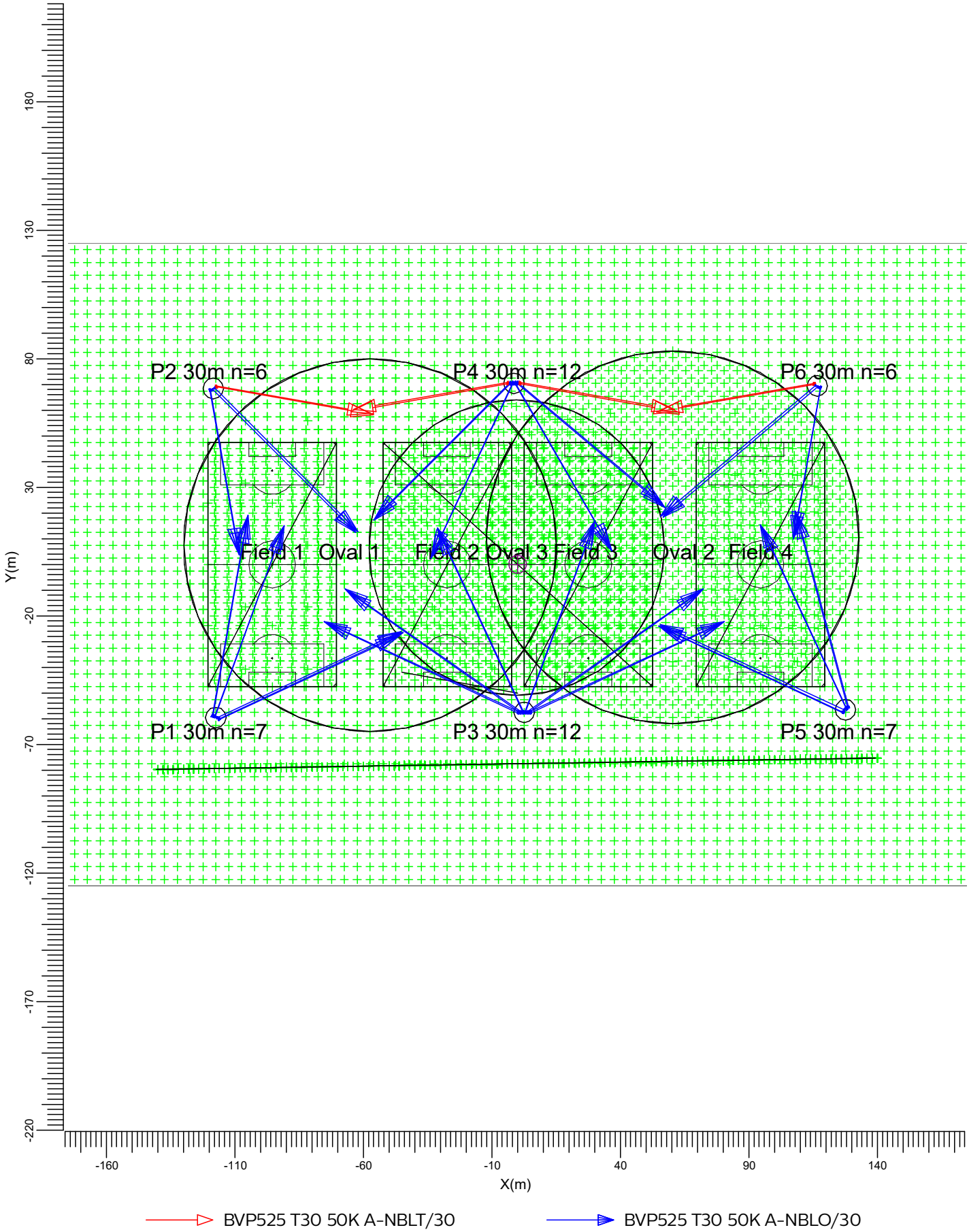




BVP525 T30 50K A-NBLT/30

BVP525 T30 50K A-NBLO/30

1.3 Top Project Overview



Scale
1:2000

2. Summary

2.1 Observer Information

Code	Observer	Position		
		X (m)	Y (m)	Z (m)
Aa	Centre	-0.00	-0.00	1.00

2.2 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
A	8	BVP525 T30 50K A-NBLT/30	1 * LED1930/757	1301.5	1 * 183011
B	42	BVP525 T30 50K A-NBLO/30	1 * LED1930/757	1301.5	1 * 183011

The total installed power: 65.08 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code		Power (kWatt)
	A	B	
Training 50 lx	4	22	33.84
Comp 100 lx	8	42	65.08
Oval 1 100 lx	4	25	37.74
Oval 2 100 lx	4	25	37.74
All Initial	8	42	65.08

Number of Luminaires Per Arrangement:

Arrangement	Luminaire Code		Power (kWatt)
	A	B	
P1 30m	0	7	9.11
P2 30m	2	4	7.81
P3 30m	0	12	15.62
P4 30m	4	8	15.62
P5 30m	0	7	9.11
P6 30m	2	4	7.81

2.3 Calculation Results

Switching Modes:

Code	Switching Mode	Maintenance factor
1	Training 50 lx	0.86
2	Comp 100 lx	0.86
3	Oval 1 100 lx	0.86
4	Oval 2 100 lx	0.86
5	All Initial	1.00

(Il)luminance Calculations:

Calculation	Switching Mode	Type	Unit	Ave	Max	Min/Ave	Min/Max
Field 1 50 lx	1	Horizontal Illuminance	lux	58.1		0.67	0.45
Field 1 100 lx	2	Horizontal Illuminance	lux	110		0.67	0.49

Calculation	Switching Mode	Type	Unit	Ave	Max	Min/Ave	Min/Max
Field 2 50 lx	1	Horizontal Illuminance	lux	57.5		0.73	0.49
Field 2 100 lx	2	Horizontal Illuminance	lux	113		0.69	0.45
Field 2 100 lx only	3	Horizontal Illuminance	lux	112		0.70	0.51
Field 3 50 lx	1	Horizontal Illuminance	lux	55.2		0.71	0.46
Field 3 100 lx	2	Horizontal Illuminance	lux	109		0.68	0.43
Field 3 100 lx only	4	Horizontal Illuminance	lux	108		0.68	0.47
Field 4 50 lx	1	Horizontal Illuminance	lux	58.9		0.67	0.46
Field 4 100 lx	2	Horizontal Illuminance	lux	109		0.65	0.47
Oval 1 50 lx	1	Surface Illuminance	lux	56.6		0.59	0.38
Oval 1 100 lx	2	Surface Illuminance	lux	109		0.61	0.37
Oval 2 50 lx	1	Surface Illuminance	lux	55.6		0.55	0.34
Oval 2 100 lx	2	Surface Illuminance	lux	107		0.58	0.34
Oval 2 100 lx only	4	Surface Illuminance	lux	106		0.58	0.39
Oval 3 50 lx	1	Surface Illuminance	lux	57.0		0.67	0.43
Oval 3 100 lx	2	Surface Illuminance	lux	113		0.62	0.39
South Bdy Ev All	5	Surface Illuminance	lux	1.15	6.84		
Surrounds Ev All	5	Illuminance -> Aa	lux	17.1			

Glare Rating for Grid of Observers:

Calculation	Switching Mode	Observer Grid	Reference Grid	Reflectance	GR-Max
Field 1 100 lx GR	5	Field 1 GR@1.5m	Field 1	0.25	46.1
Field 2 100 lx GR	5	Field 2 GR@1.5m	Field 2	0.25	47.9
Field 3 100 lx GR	5	Field 3 GR@1.5m	Field 3	0.25	47.8
Field 4 100 lx GR	5	Field 4 GR@1.5m	Field 4	0.25	47.5
Oval 1 100 lx GR	5	Oval 1 GR@1.5m	Oval 1	0.25	48.3
Oval 2 100 lx GR	5	Oval 2 GR@1.5m	Oval 2	0.25	49.0

Obtrusive Light Calculations:

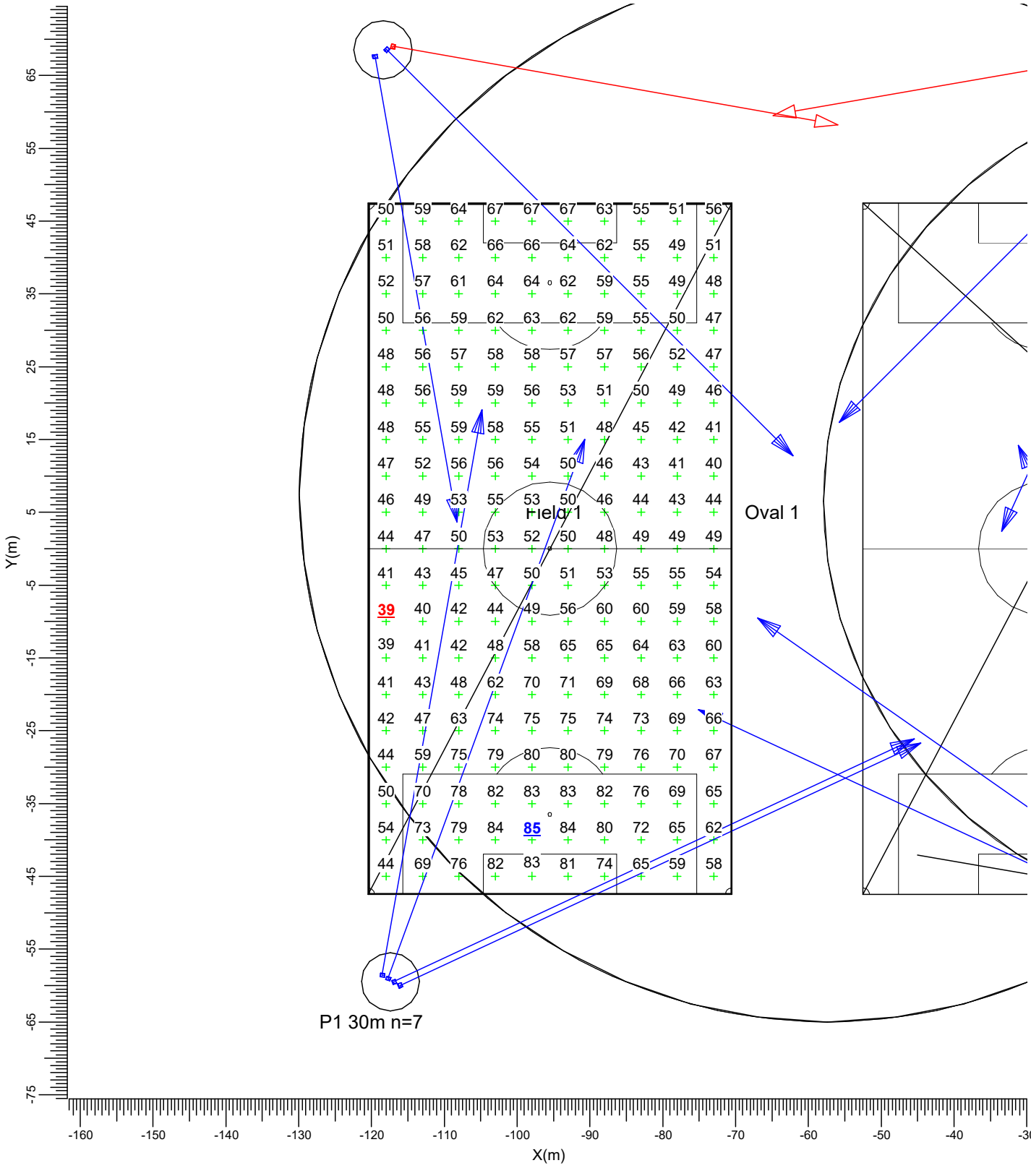
Switching Mode	ULR
1	0.00
2	0.00
3	0.00
4	0.00
5	0.00

3. Calculation Results

3.1 Field 1 50 lx: Graphical Table

Training 50 lx

Grid : Field 1 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)

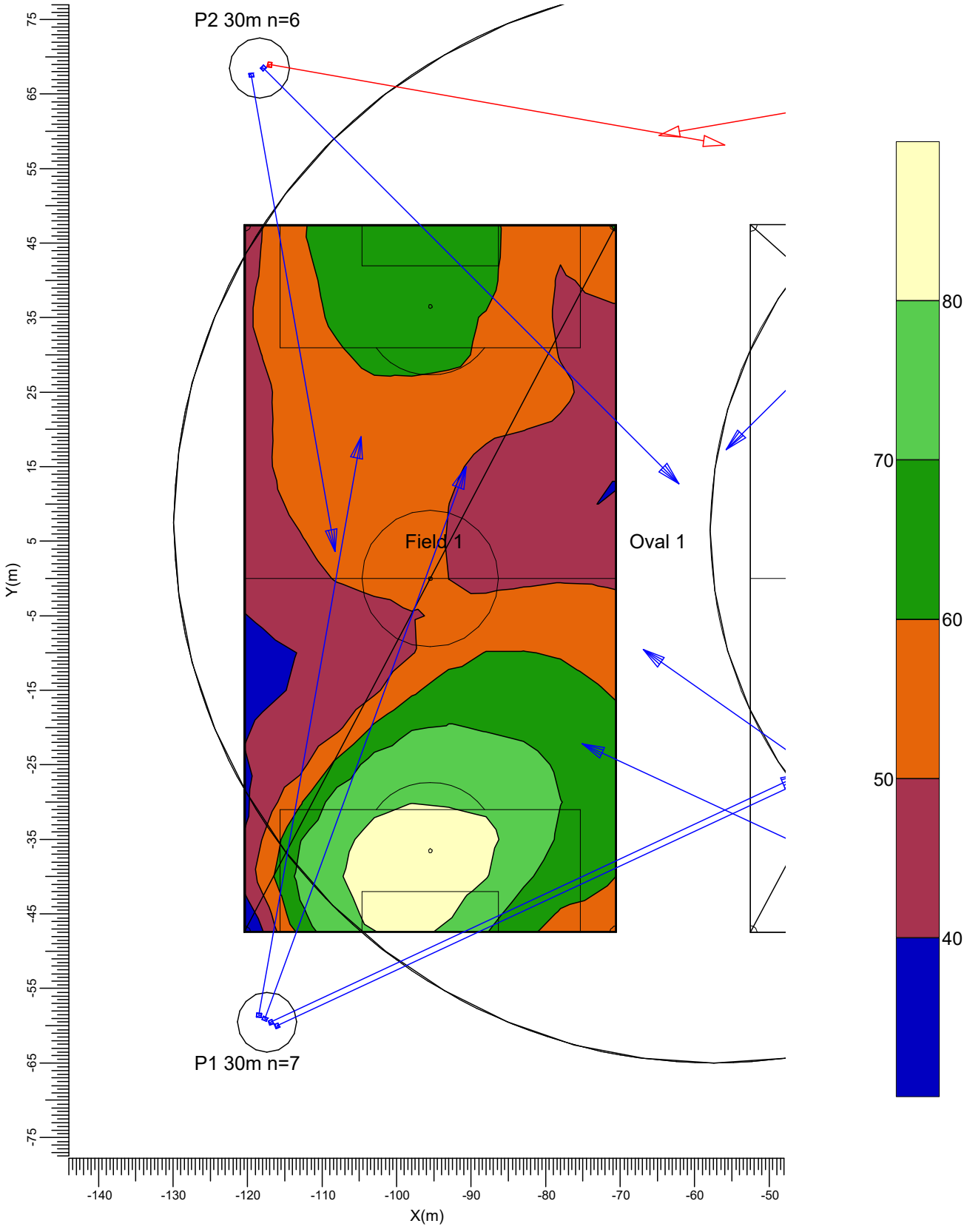


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
58.1	0.67	0.45	0.86	1:750

3.2 Field 1 50 lx: Filled Iso Contour

Training 50 lx

Grid : Field 1 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



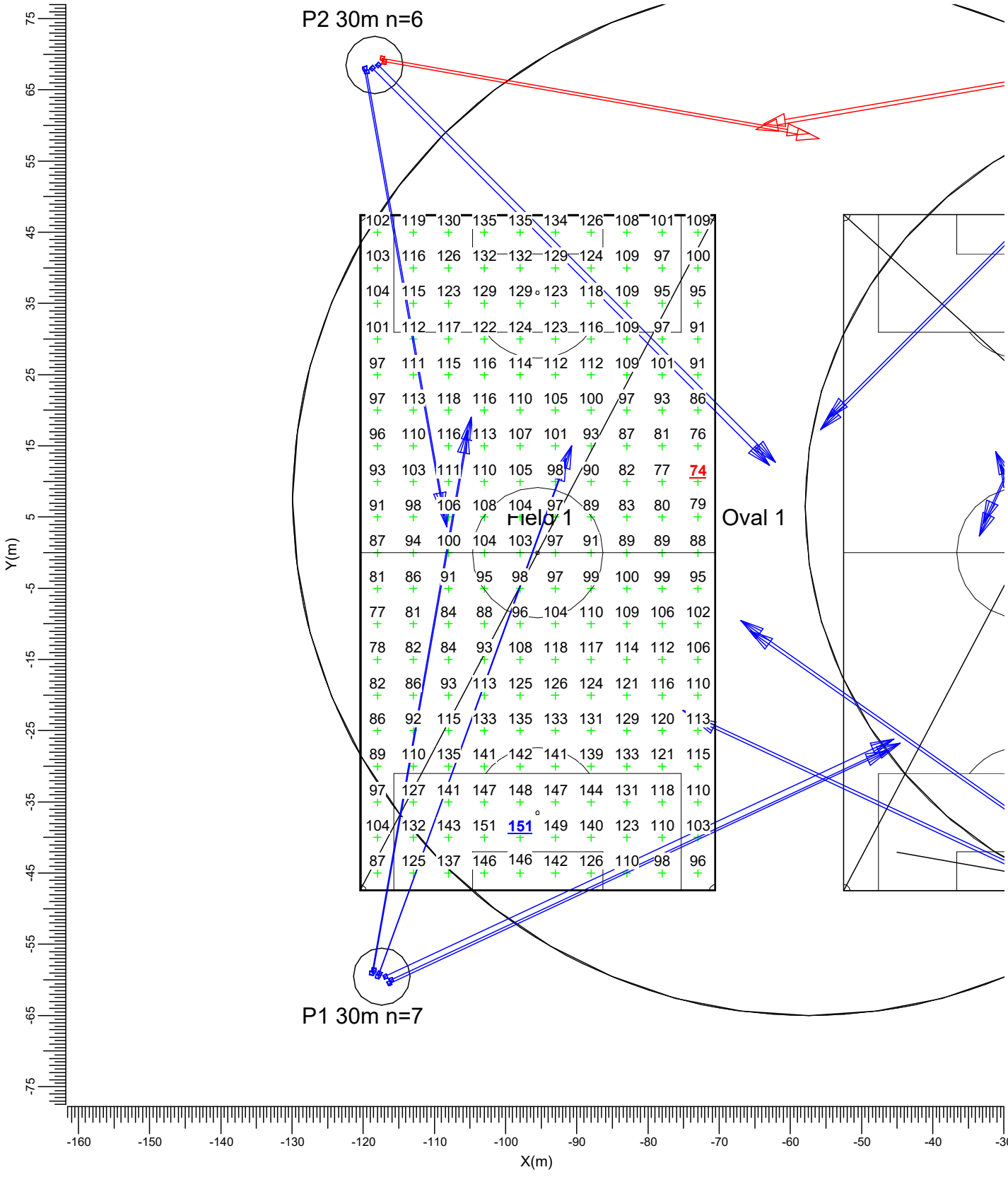
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
58.1	0.67	0.45	0.86	1:750

3.3 Field 1 100 lx: Graphical Table

Comp 100 lx

Grid : Field 1 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



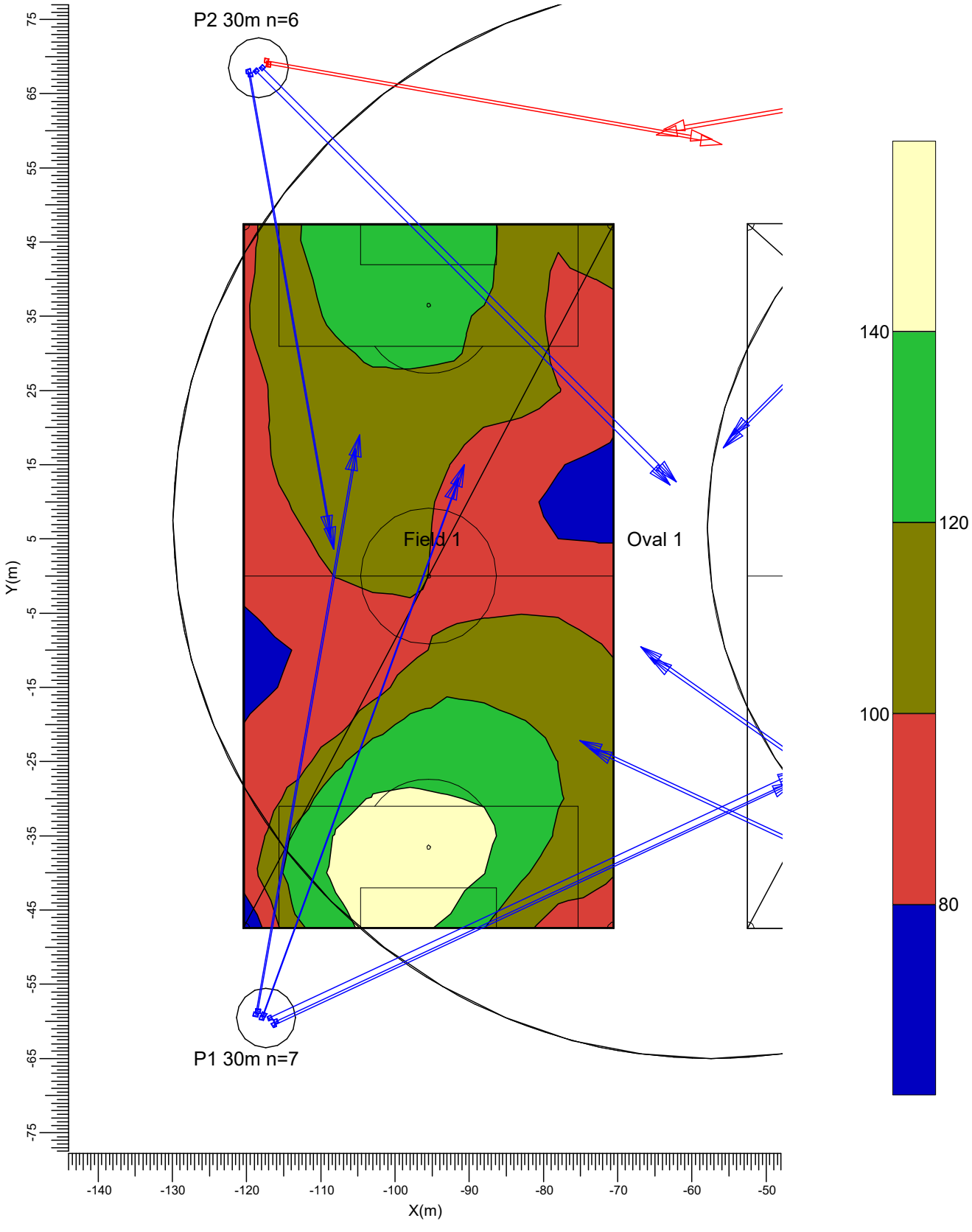
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
110	0.67	0.49	0.86	1:750

3.4 Field 1 100 lx: Filled Iso Contour

Comp 100 lx

Grid : Field 1 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



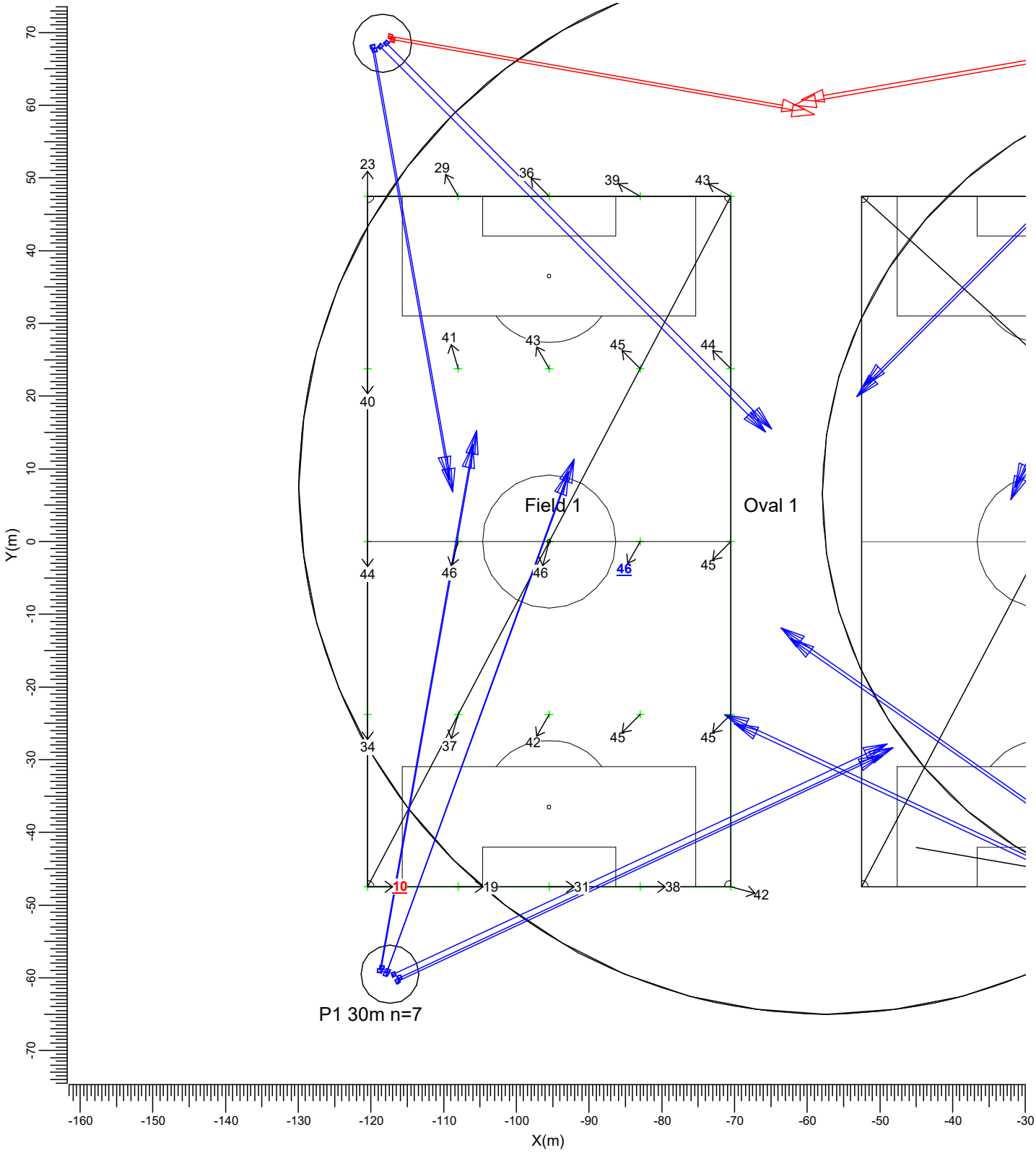
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
110	0.67	0.49	0.86	1:750

3.5 Field 1 100 lx GR: Graphical Table

All Initial

Grid of Observers : Field 1 GR@1.5m
Calculation : Glare Rating
Grid for Background Luminance: Field 1 (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg

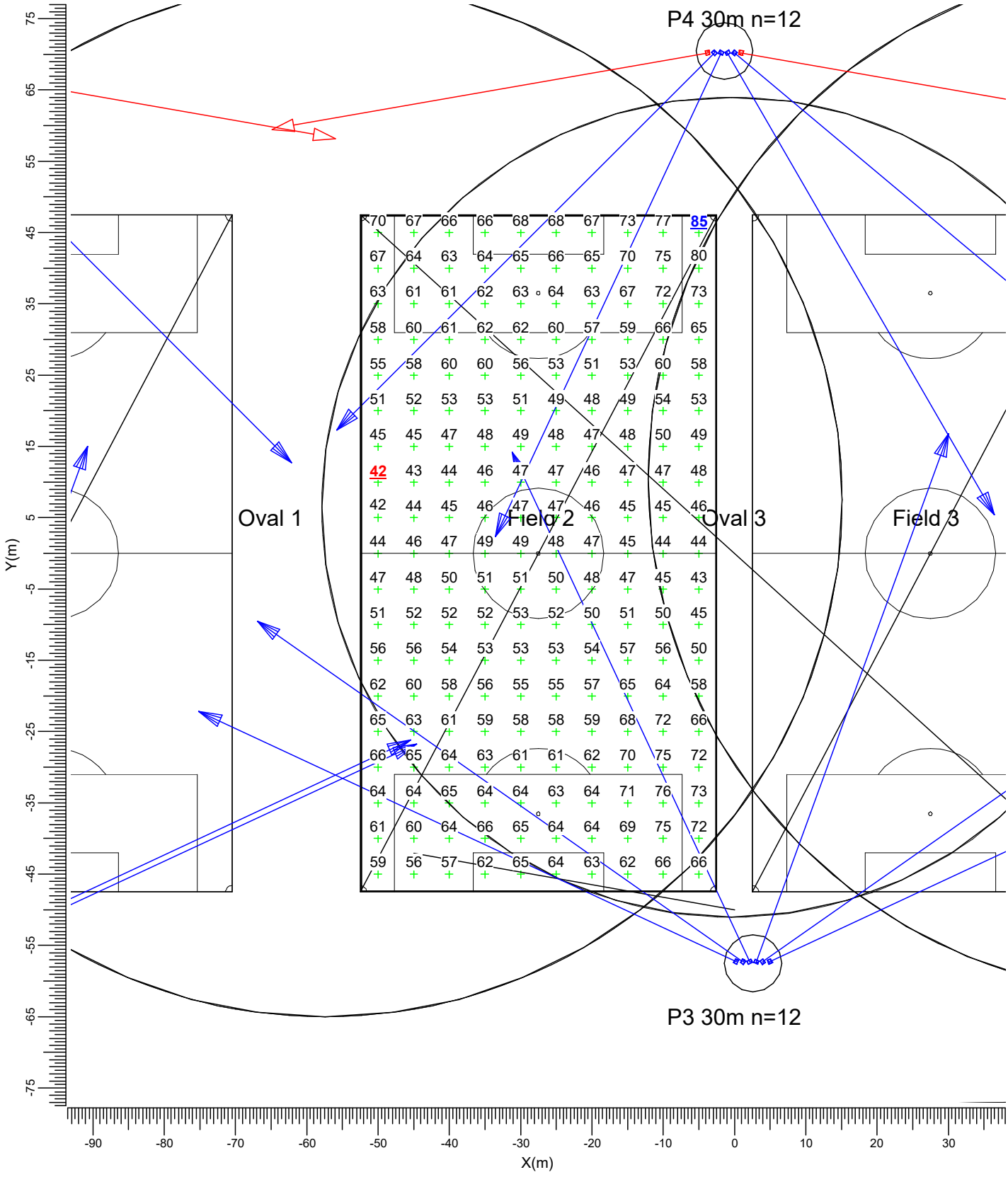


Maximum	Project maintenance factor	Scale
46.1	1.00	1:750

3.6 Field 2 50 lx: Graphical Table

Training 50 lx

Grid : Field 2 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)

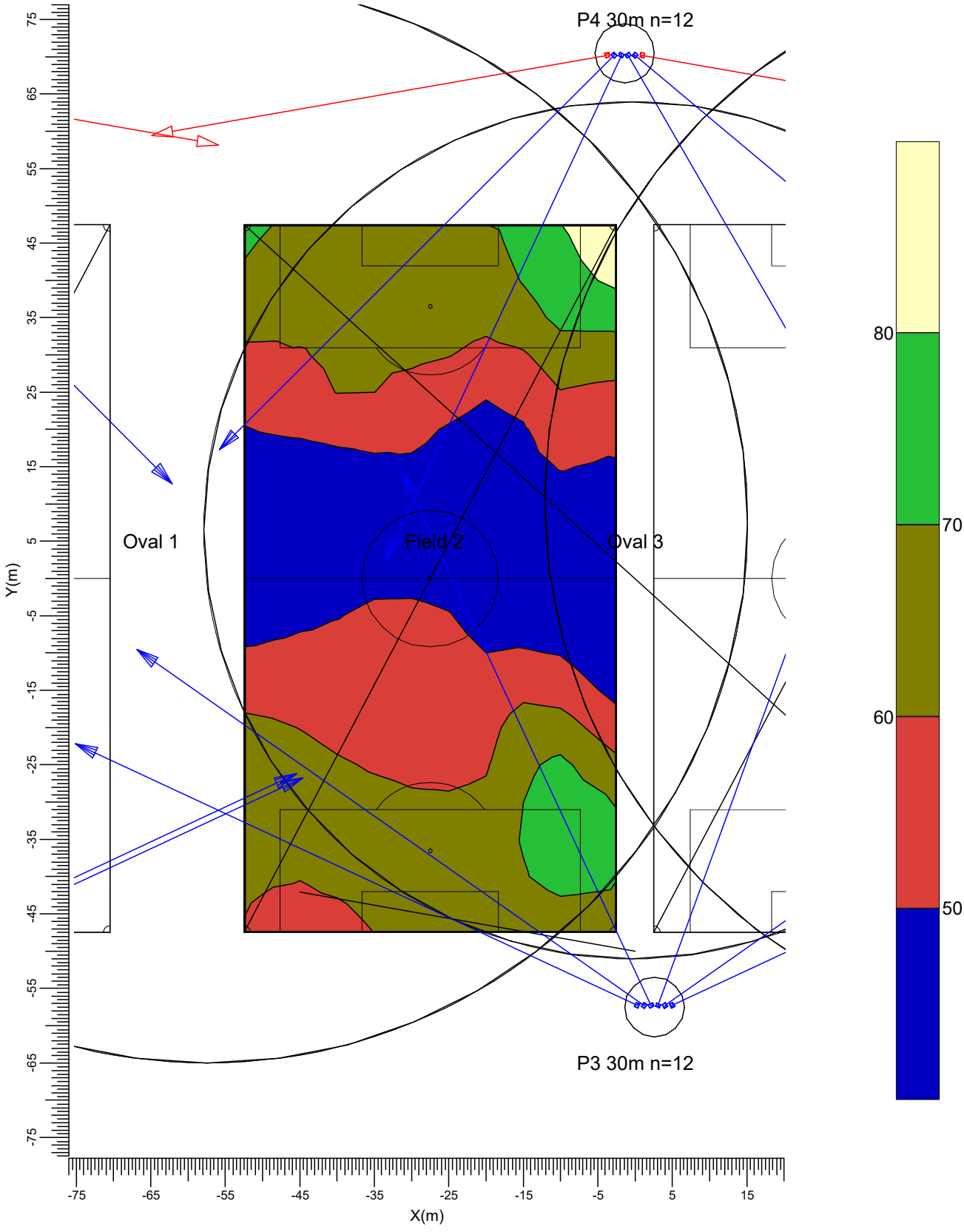


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
57.5	0.73	0.49	0.86	1:750

3.7 Field 2 50 lx: Filled Iso Contour

Training 50 lx

Grid : Field 2 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



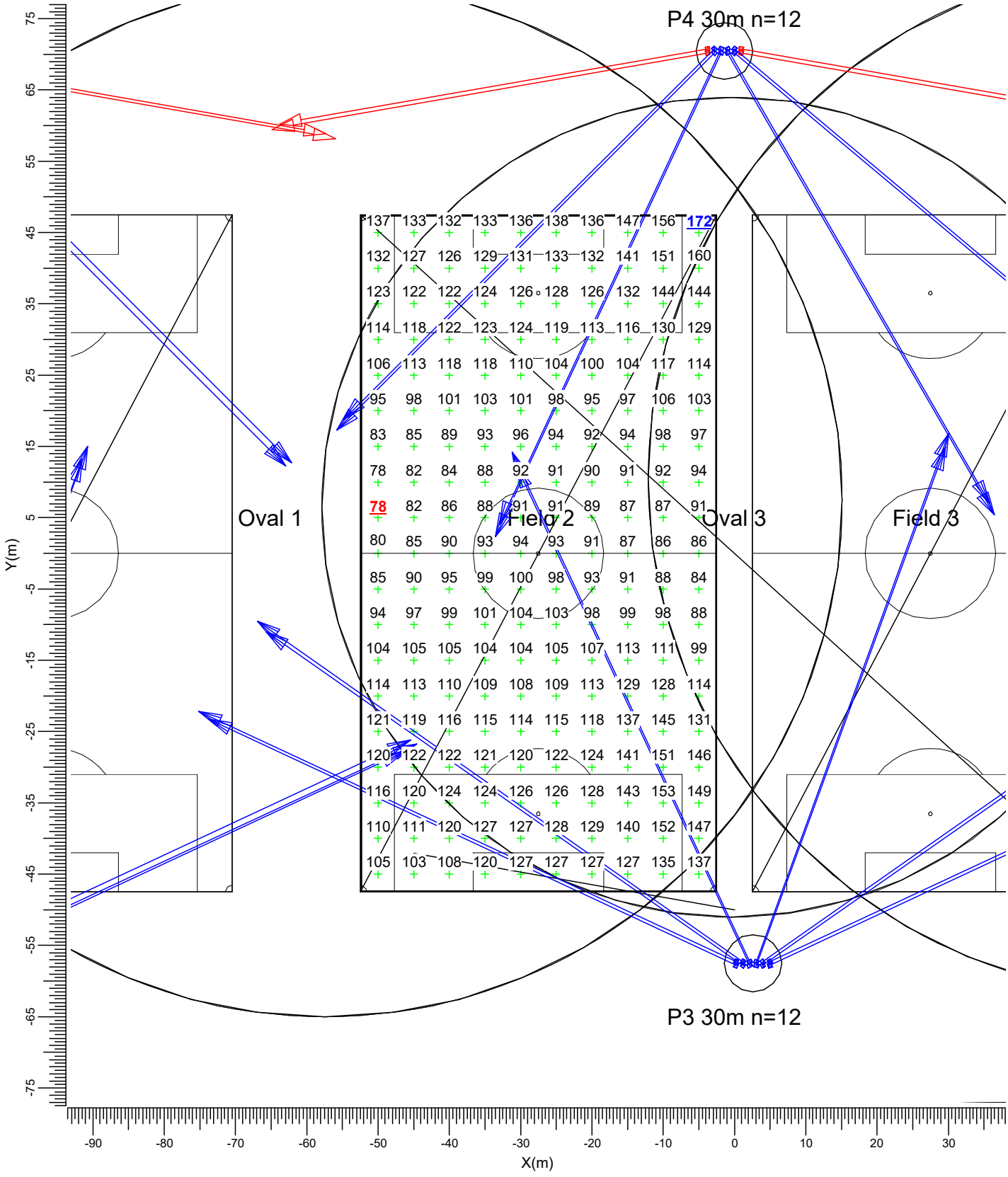
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
57.5	0.73	0.49	0.86	1:750

3.8 Field 2 100 lx: Graphical Table

Comp 100 lx

Grid : Field 2 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



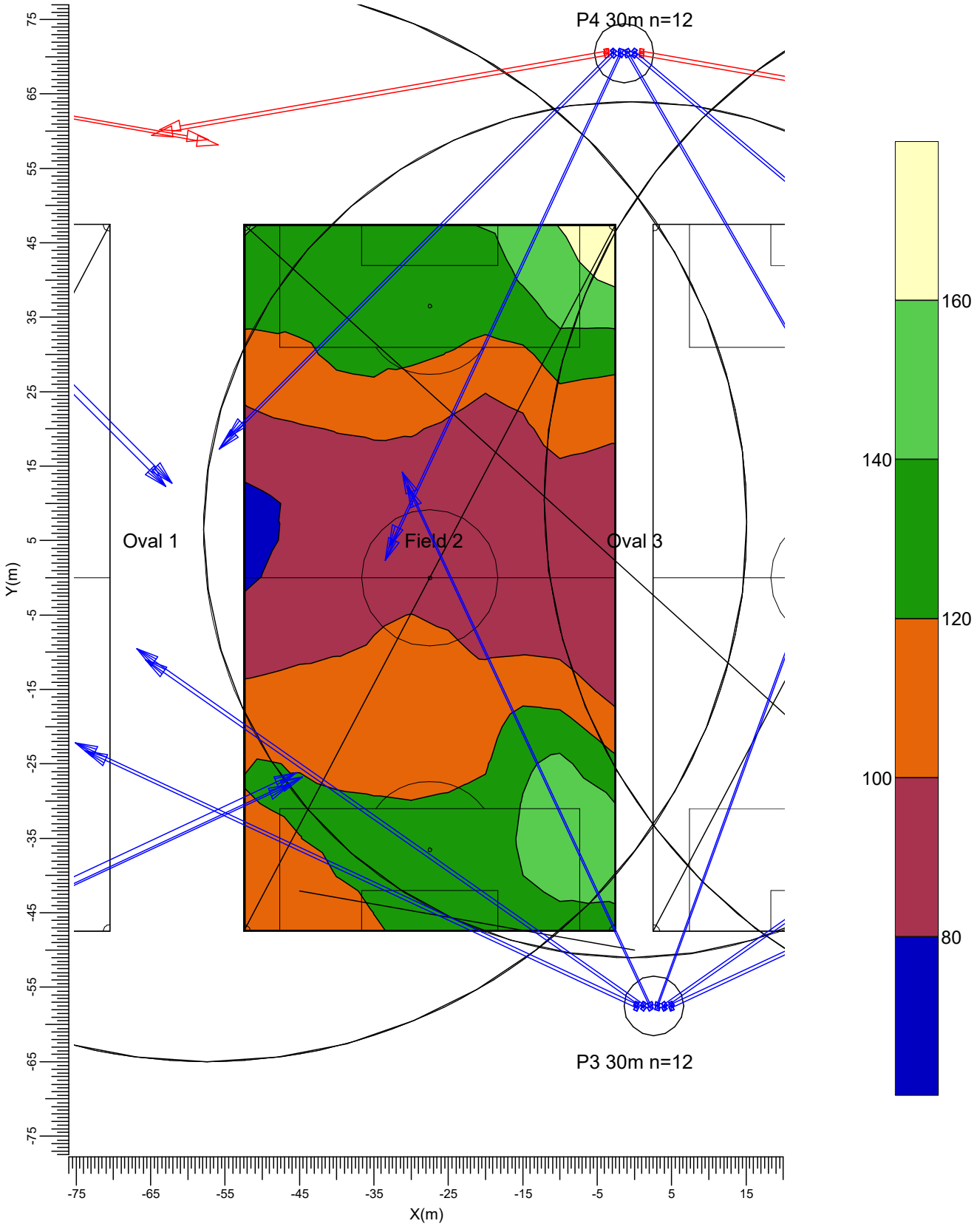
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
113	0.69	0.45	0.86	1:750

3.9 Field 2 100 lx: Filled Iso Contour

Comp 100 lx

Grid : Field 2 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



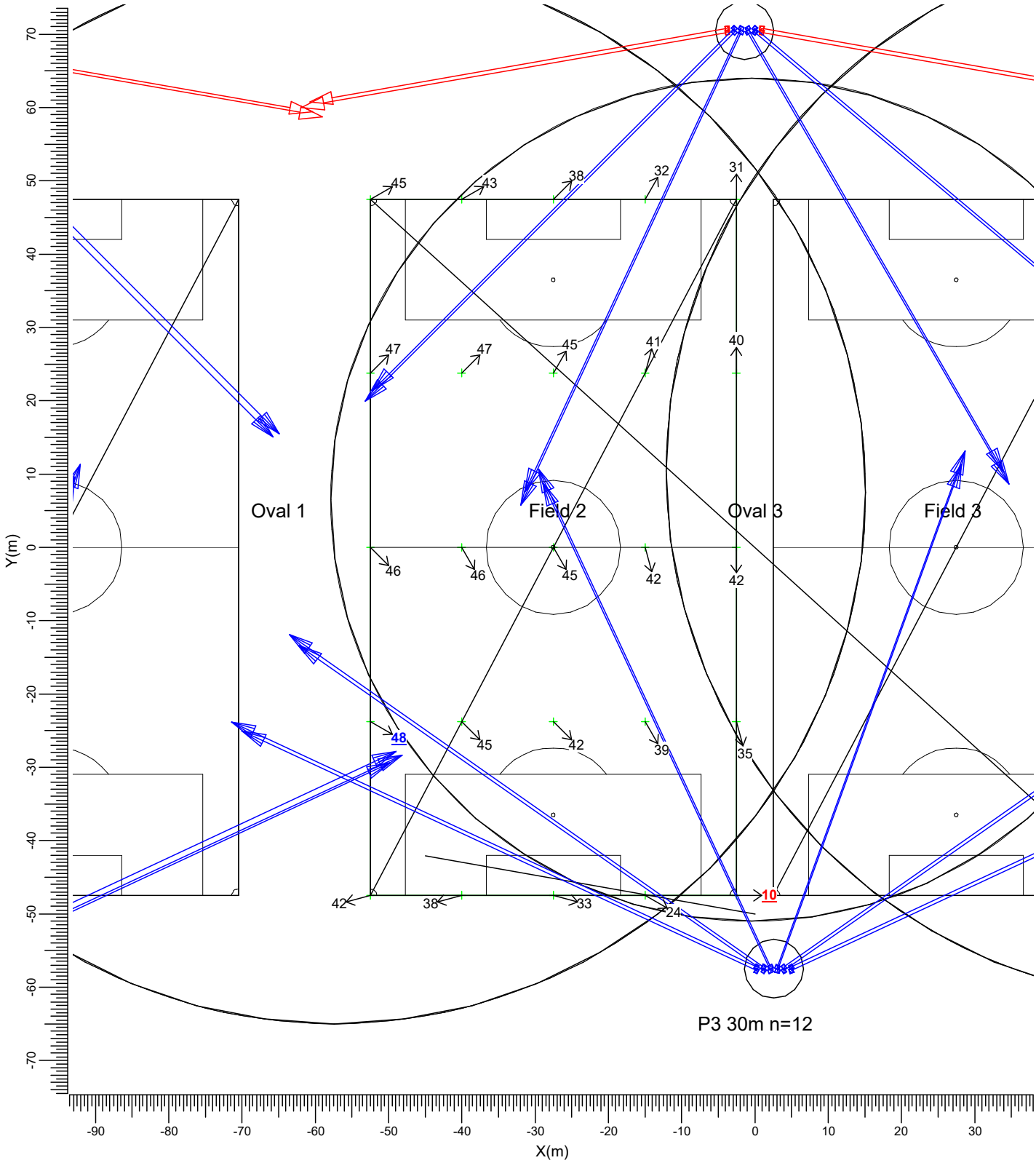
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
113	0.69	0.45	0.86	1:750

3.10 Field 2 100 lx GR: Graphical Table

All Initial

Grid of Observers : Field 2 GR@1.5m
Calculation : Glare Rating
Grid for Background Luminance: Field 2 (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg

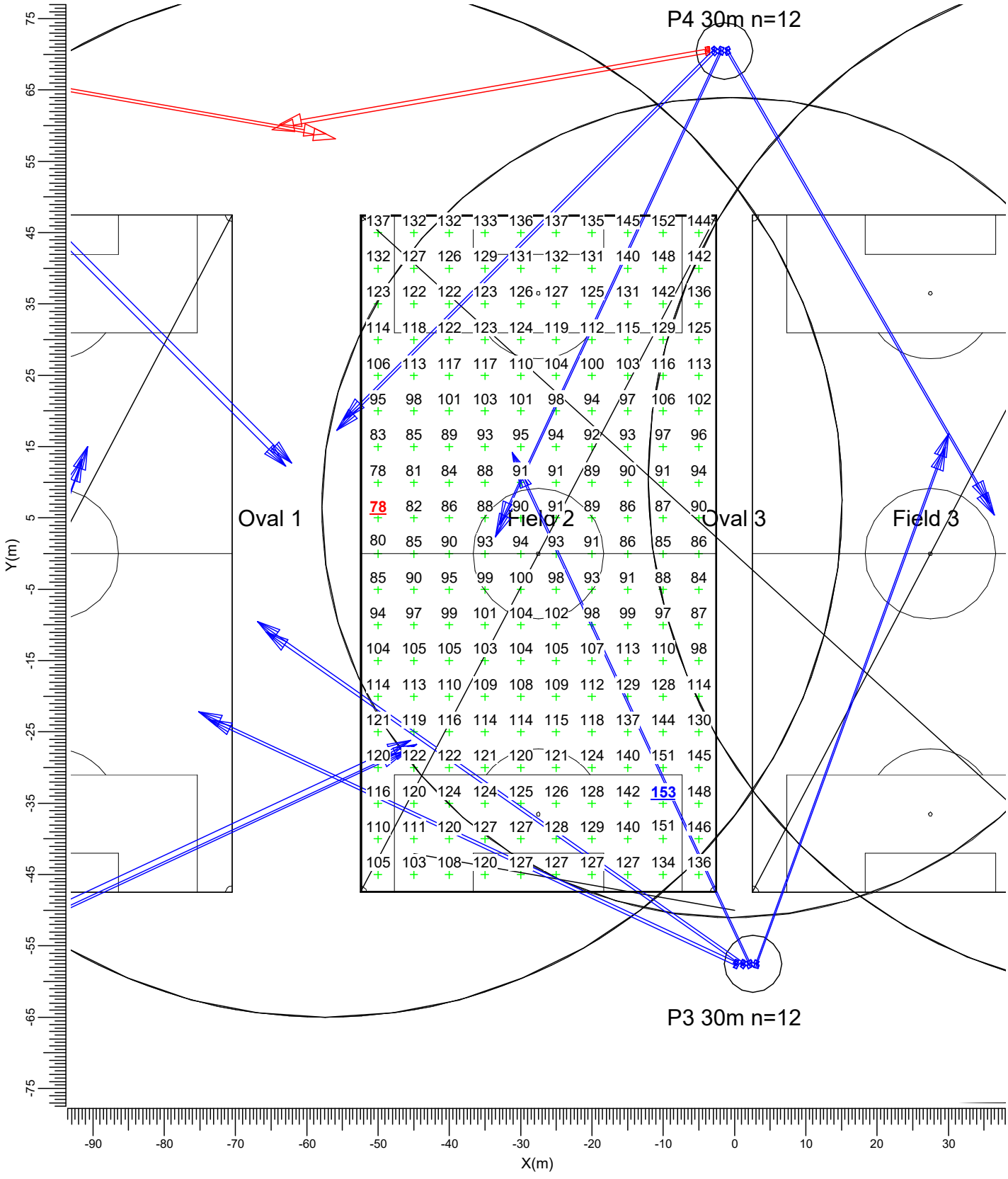


Maximum 47.9
Project maintenance factor 1.00
Scale 1:750

3.11 Field 2 100 lx only: Graphical Table

Oval 1 100 lx

Grid : Field 2 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)

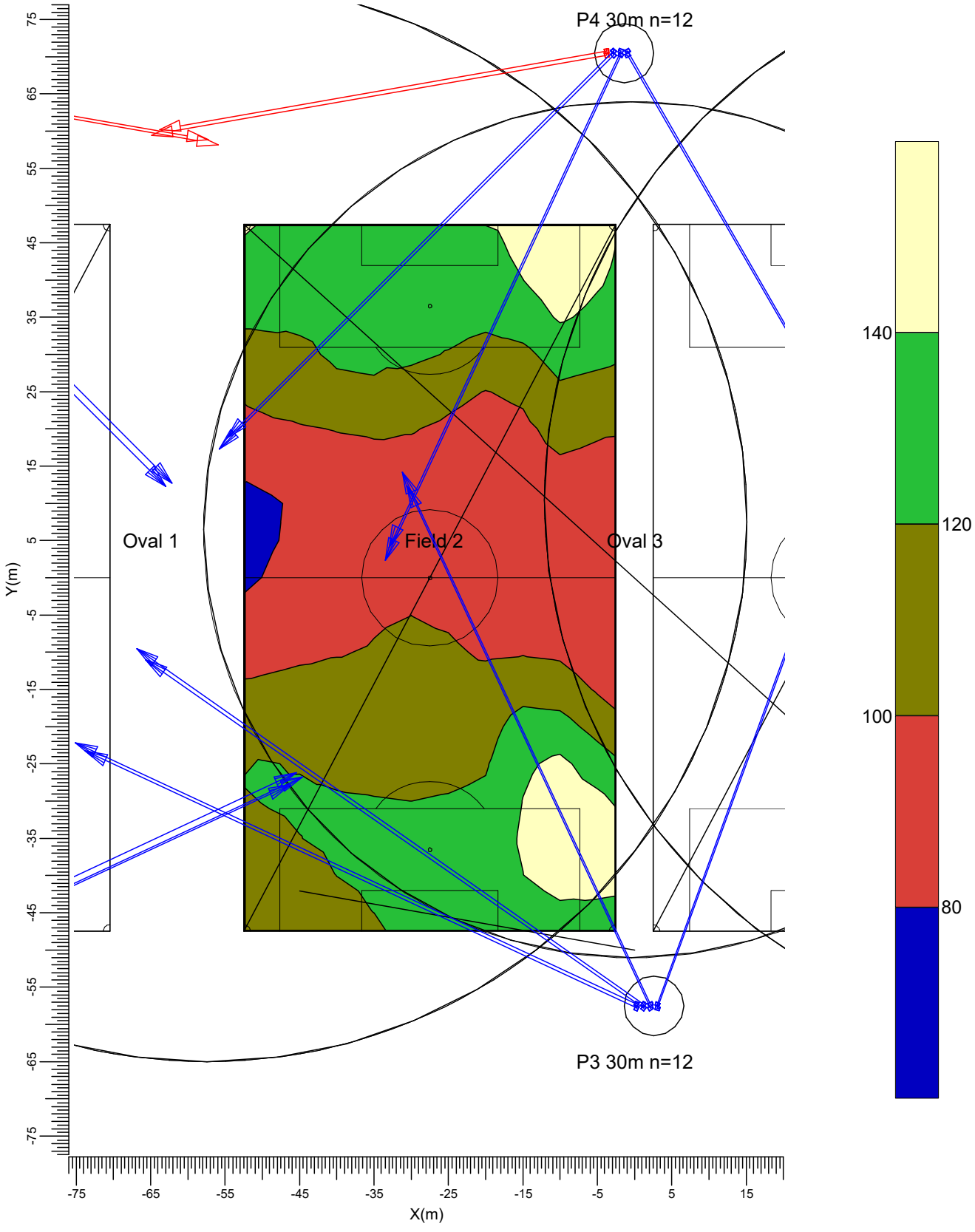


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
112	0.70	0.51	0.86	1:750

3.12 Field 2 100 lx only: Filled Iso Contour

Oval 1 100 lx

Grid : Field 2 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



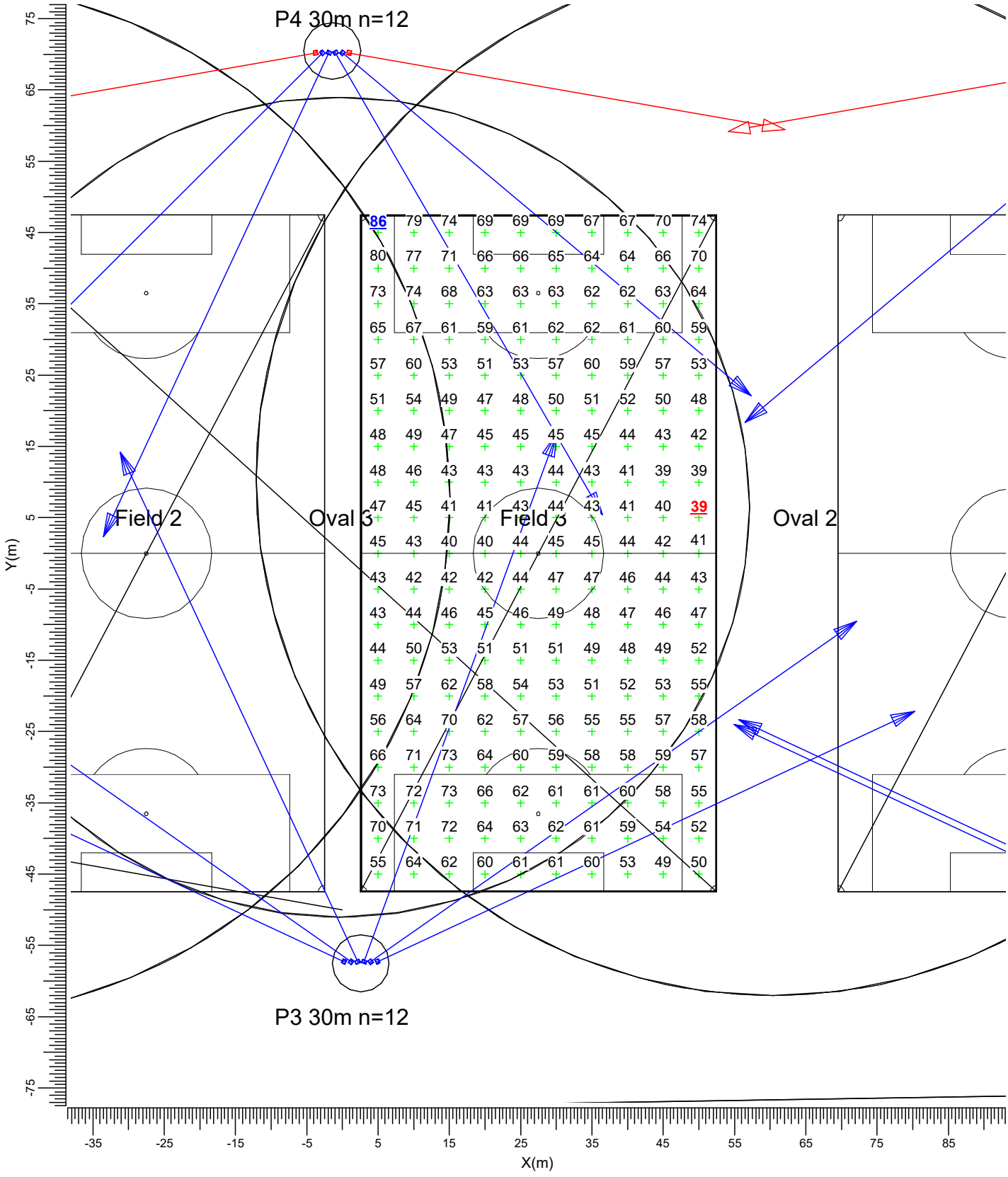
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
112	0.70	0.51	0.86	1:750

3.13 Field 3 50 lx: Graphical Table

Training 50 lx

Grid : Field 3 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)

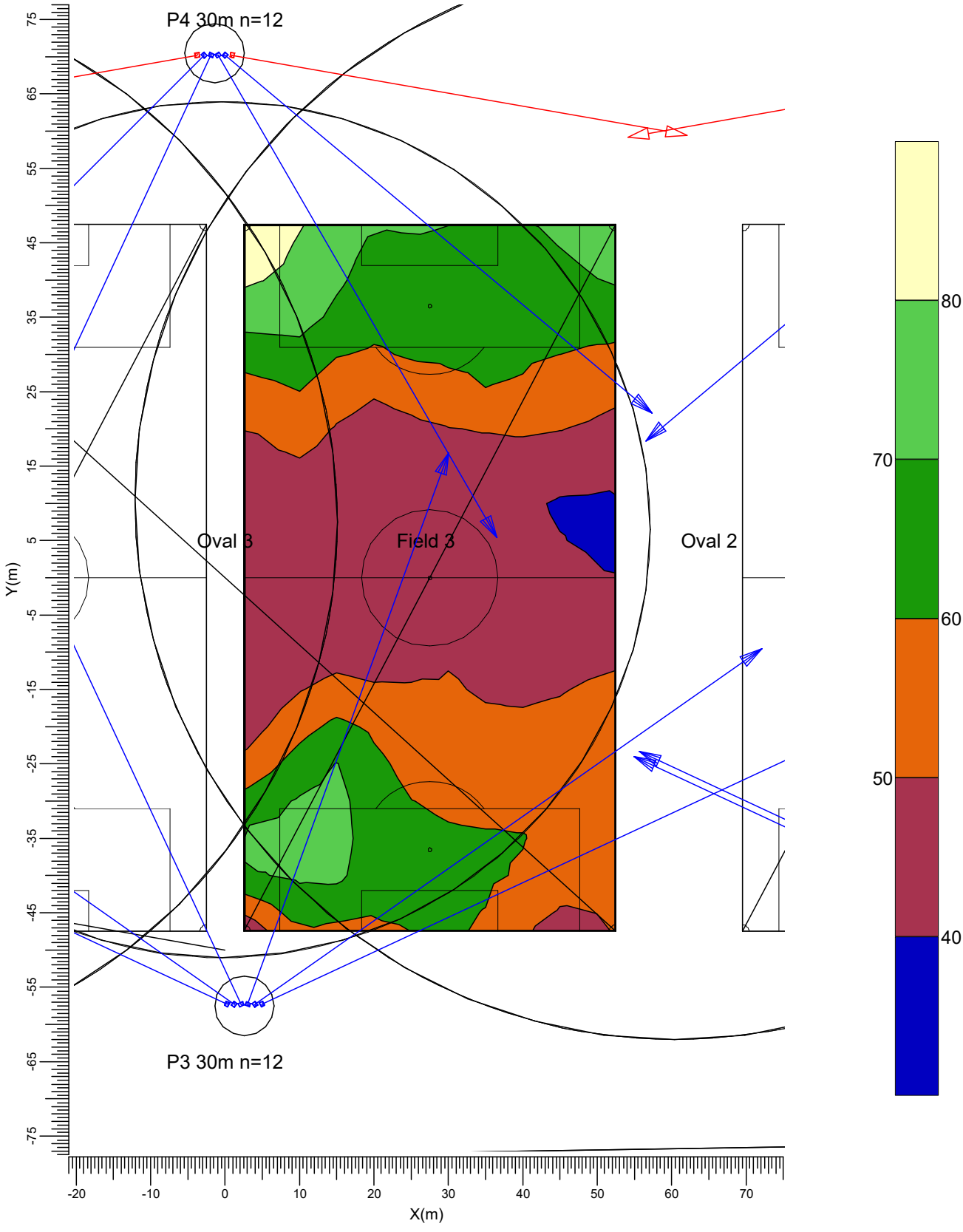


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
55.2	0.71	0.46	0.86	1:750

3.14 Field 3 50 lx: Filled Iso Contour

Training 50 lx

Grid : Field 3 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



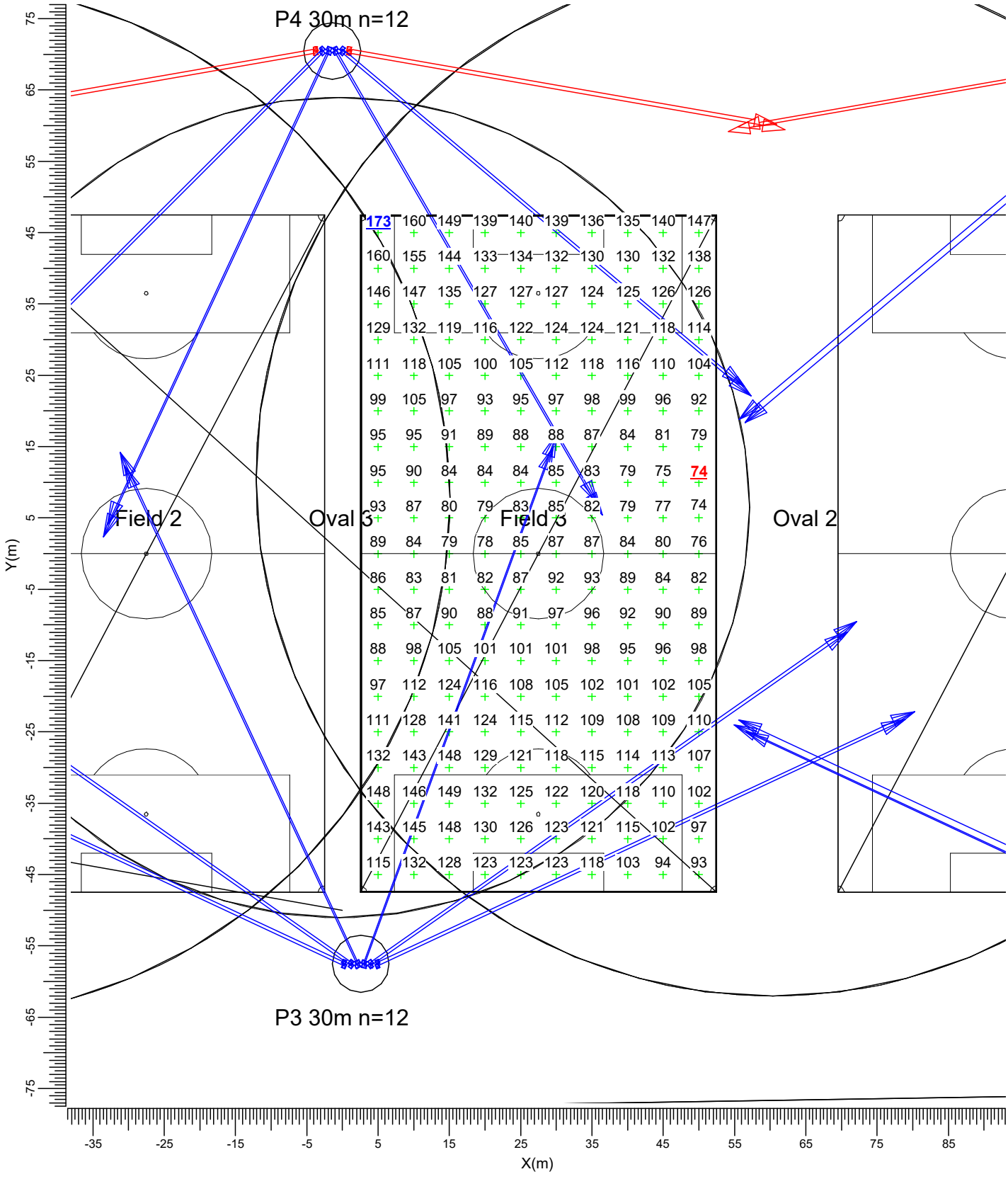
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
55.2	0.71	0.46	0.86	1:750

3.15 Field 3 100 lx: Graphical Table

Comp 100 lx

Grid : Field 3 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



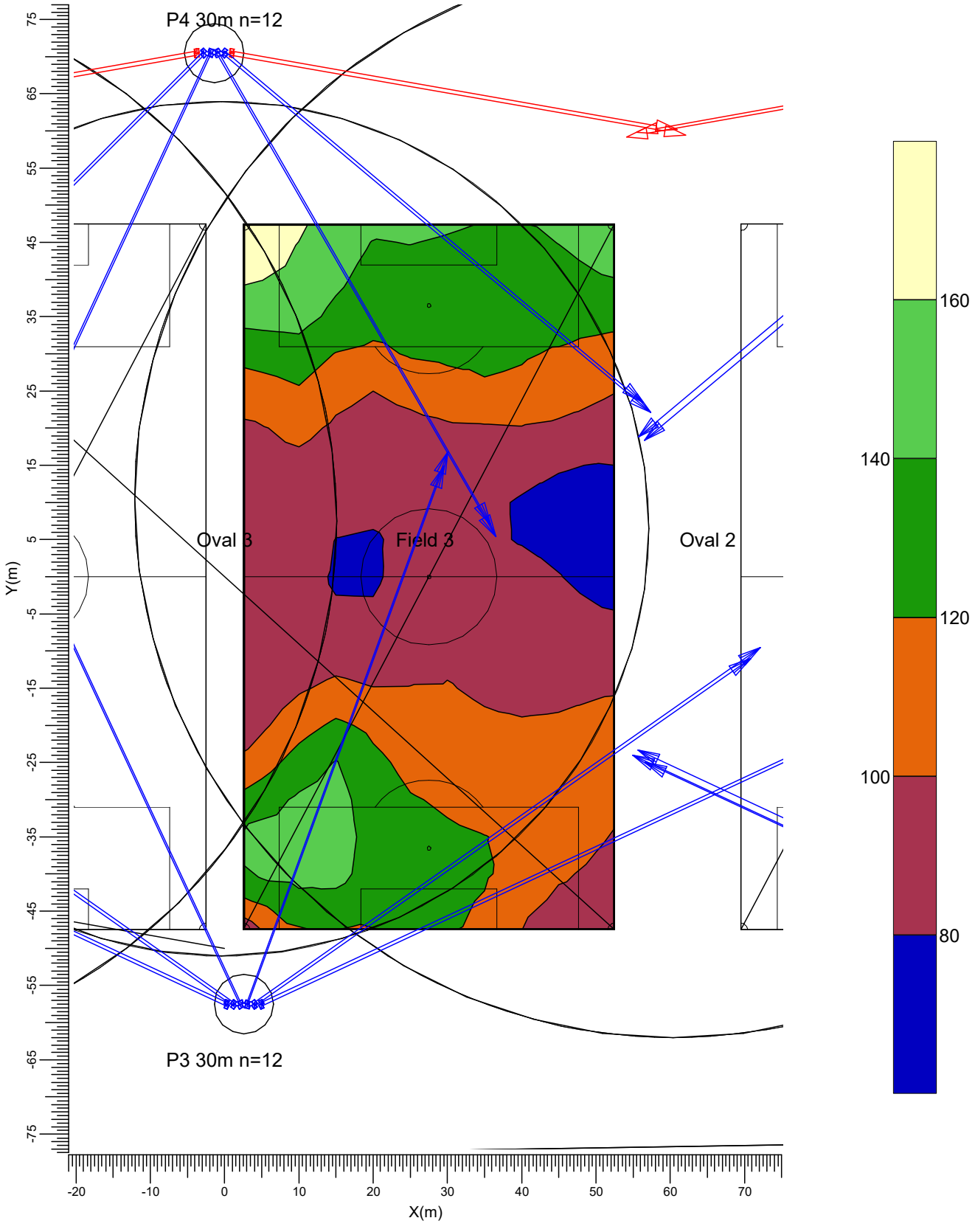
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
109	0.68	0.43	0.86	1:750

3.16 Field 3 100 lx: Filled Iso Contour

Comp 100 lx

Grid : Field 3 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



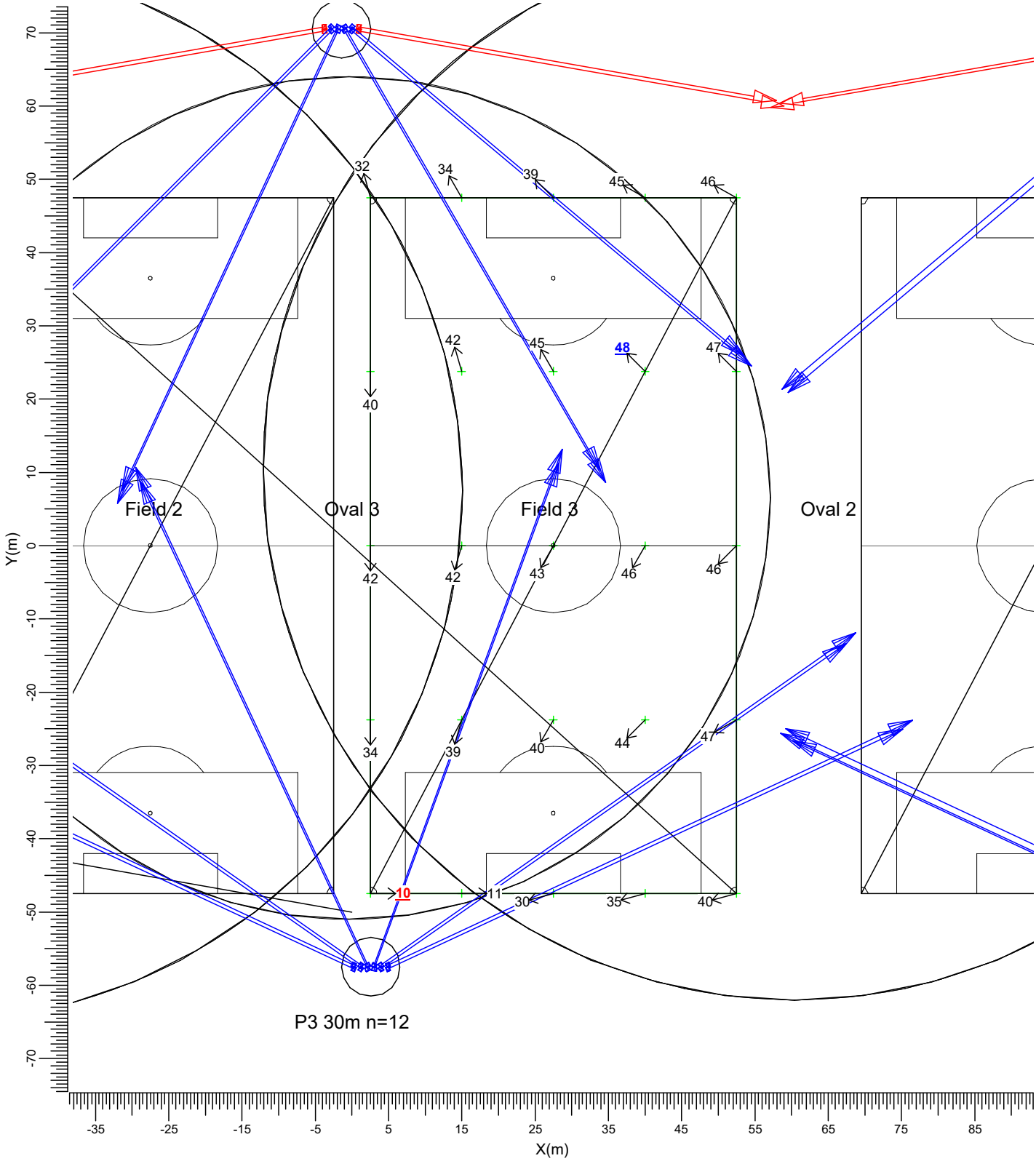
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
109	0.68	0.43	0.86	1:750

3.17 Field 3 100 lx GR: Graphical Table

All Initial

Grid of Observers : Field 3 GR@1.5m
Calculation : Glare Rating
Grid for Background Luminance: Field 3 (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



Maximum
47.8

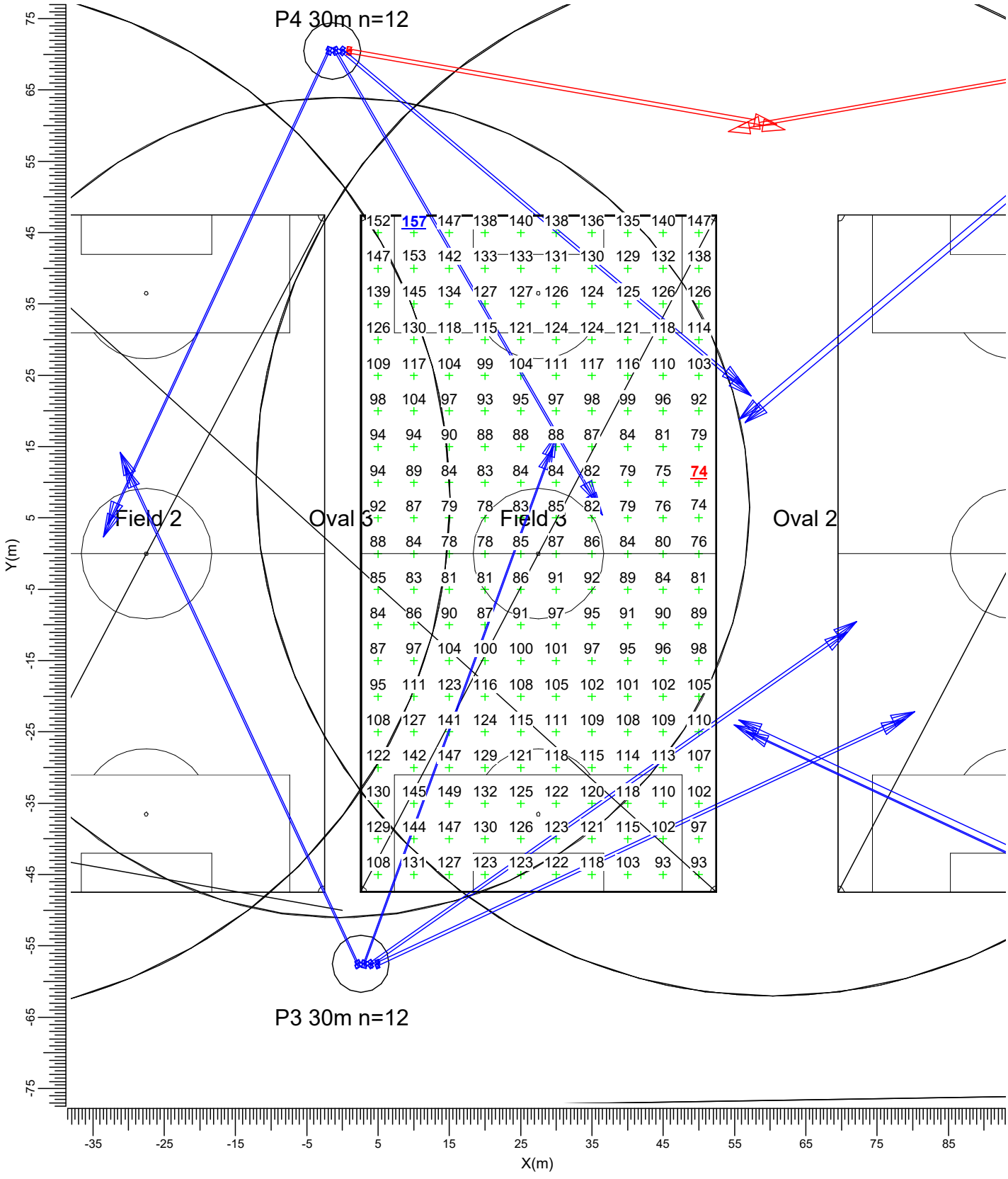
Project maintenance factor
1.00

Scale
1:750

3.18 Field 3 100 lx only: Graphical Table

Oval 2 100 lx

Grid : Field 3 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



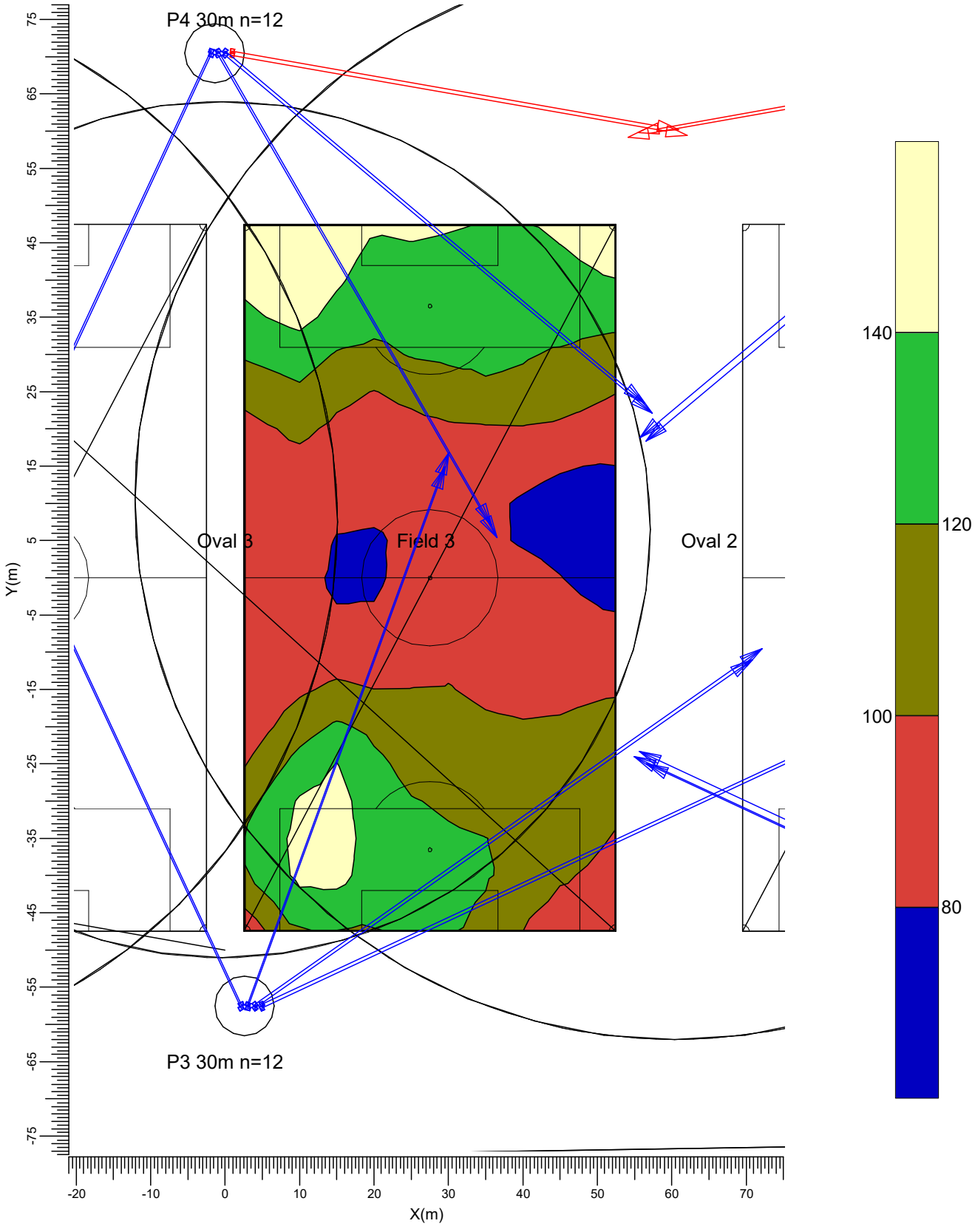
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
108	0.68	0.47	0.86	1:750

3.19 Field 3 100 lx only: Filled Iso Contour

Oval 2 100 lx

Grid : Field 3 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



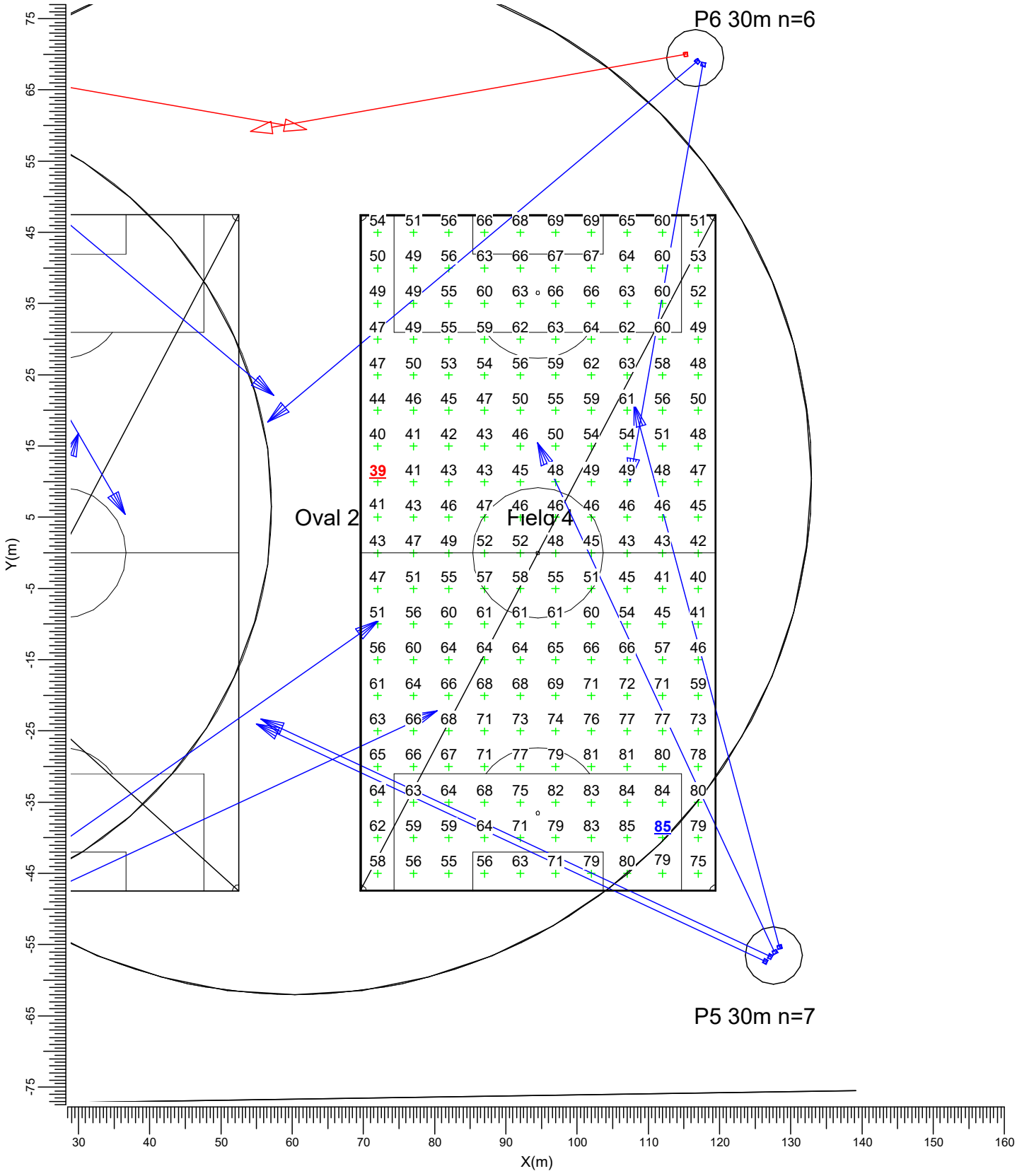
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
108	0.68	0.47	0.86	1:750

3.20 Field 4 50 lx: Graphical Table

Training 50 lx

Grid : Field 4 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)

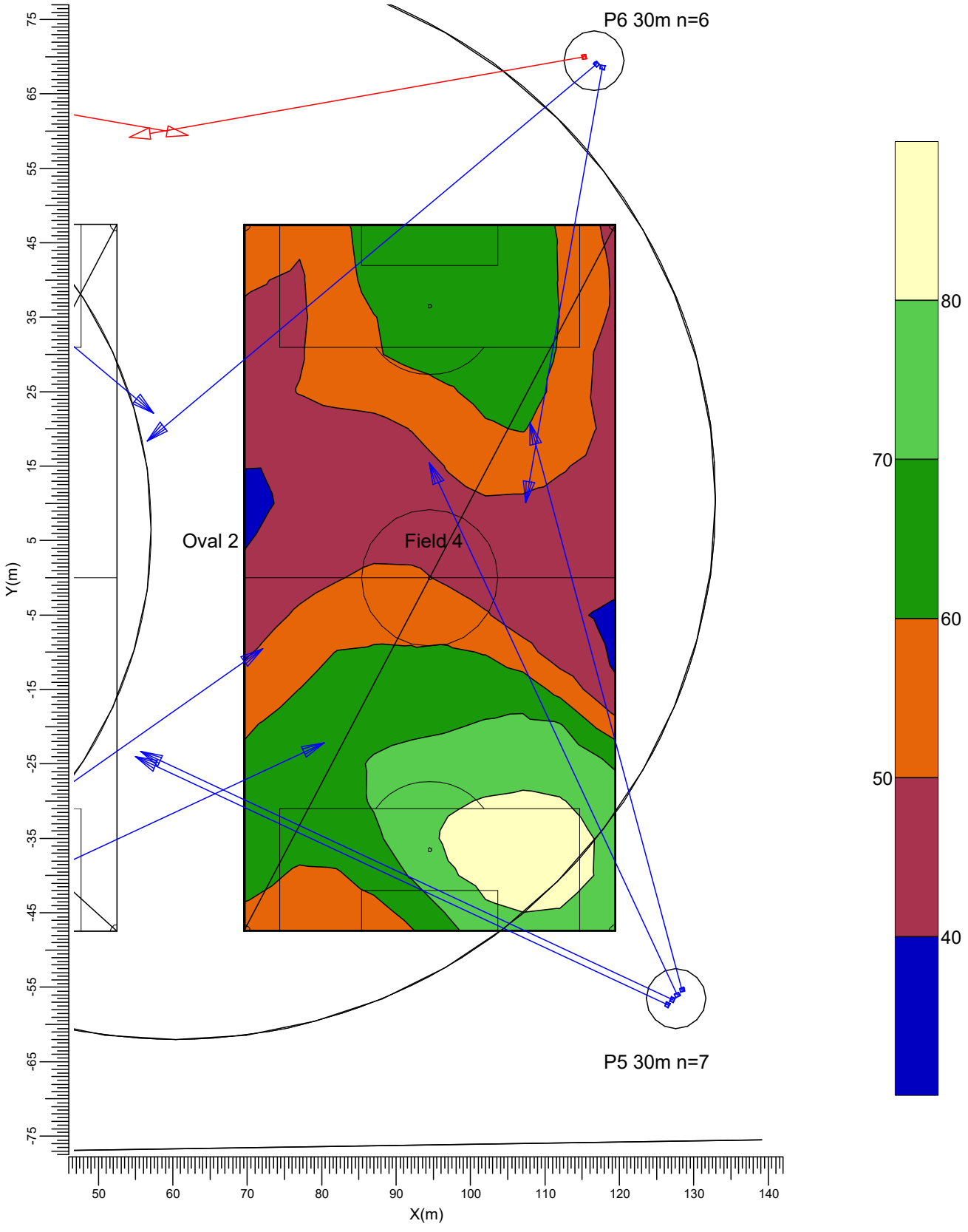


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
58.9	0.67	0.46	0.86	1:750

3.21 Field 4 50 lx: Filled Iso Contour

Training 50 lx

Grid : Field 4 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)

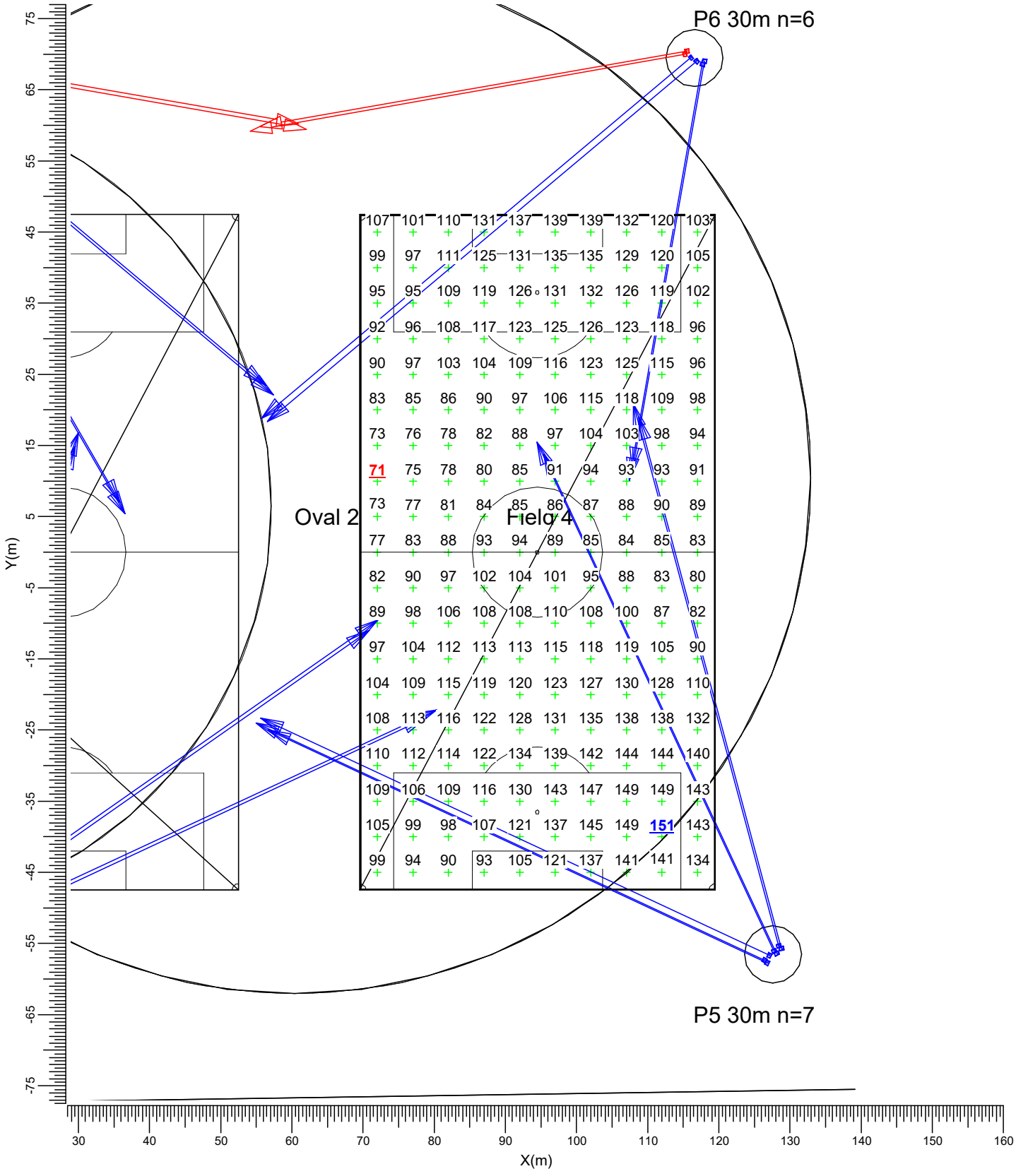


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
58.9	0.67	0.46	0.86	1:750

3.22 Field 4 100 lx: Graphical Table

Comp 100 lx

Grid : Field 4 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)



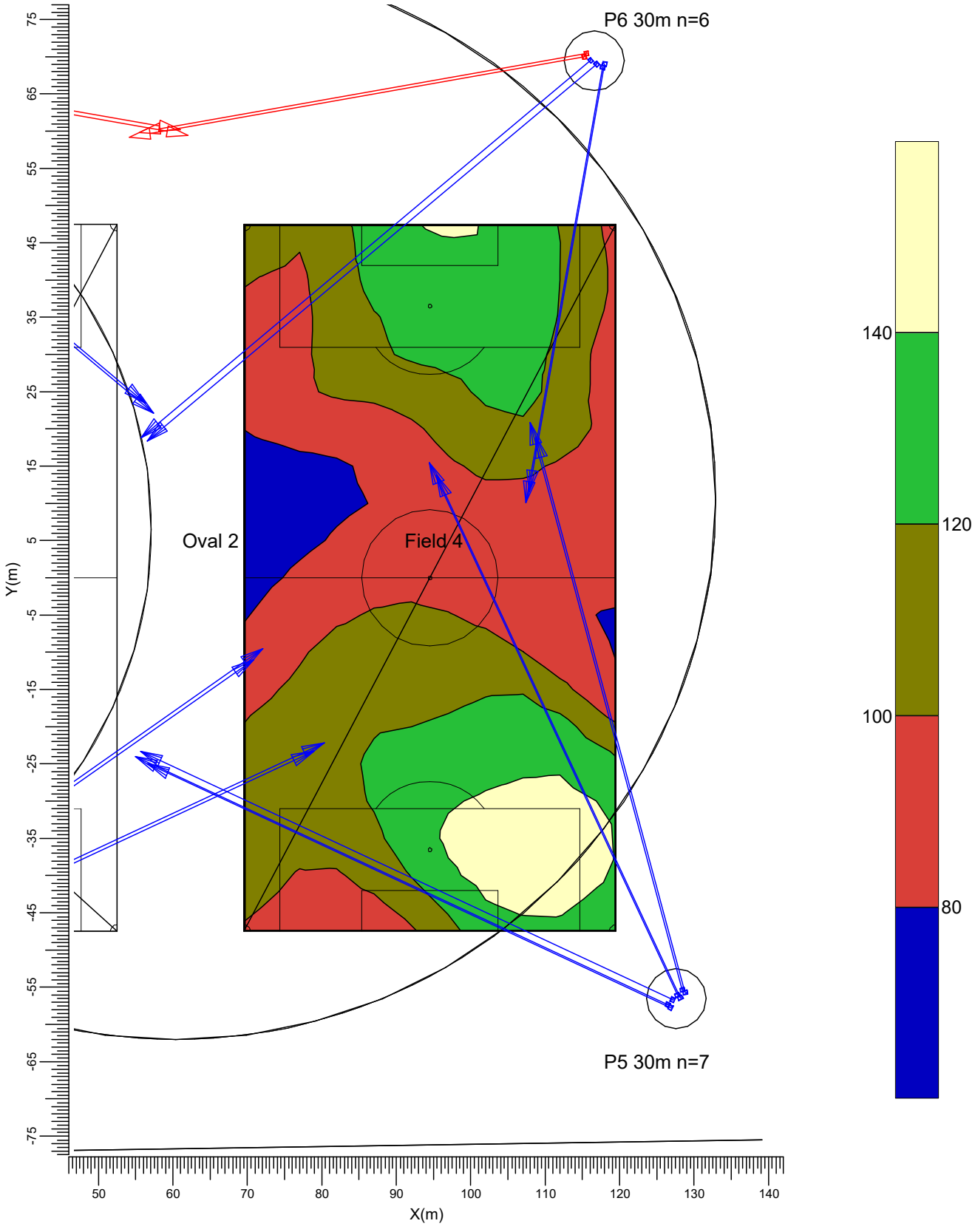
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
109	0.65	0.47	0.86	1:750

3.23 Field 4 100 lx: Filled Iso Contour

Comp 100 lx

Grid : Field 4 at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)

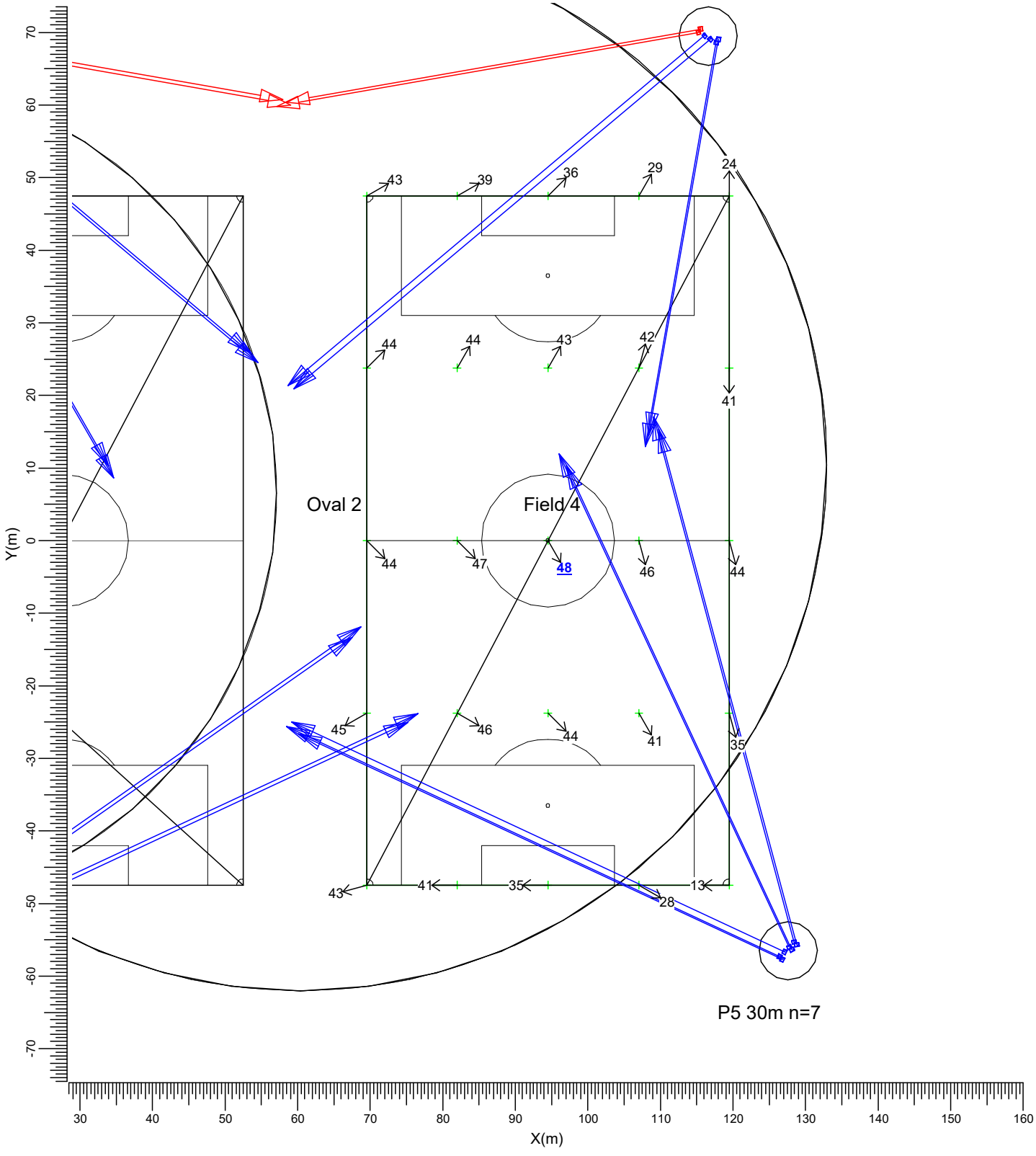


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
109	0.65	0.47	0.86	1:750

3.24 Field 4 100 lx GR: Graphical Table

All Initial

Grid of Observers : Field 4 GR@1.5m
Calculation : Glare Rating
Grid for Background Luminance: Field 4 (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg

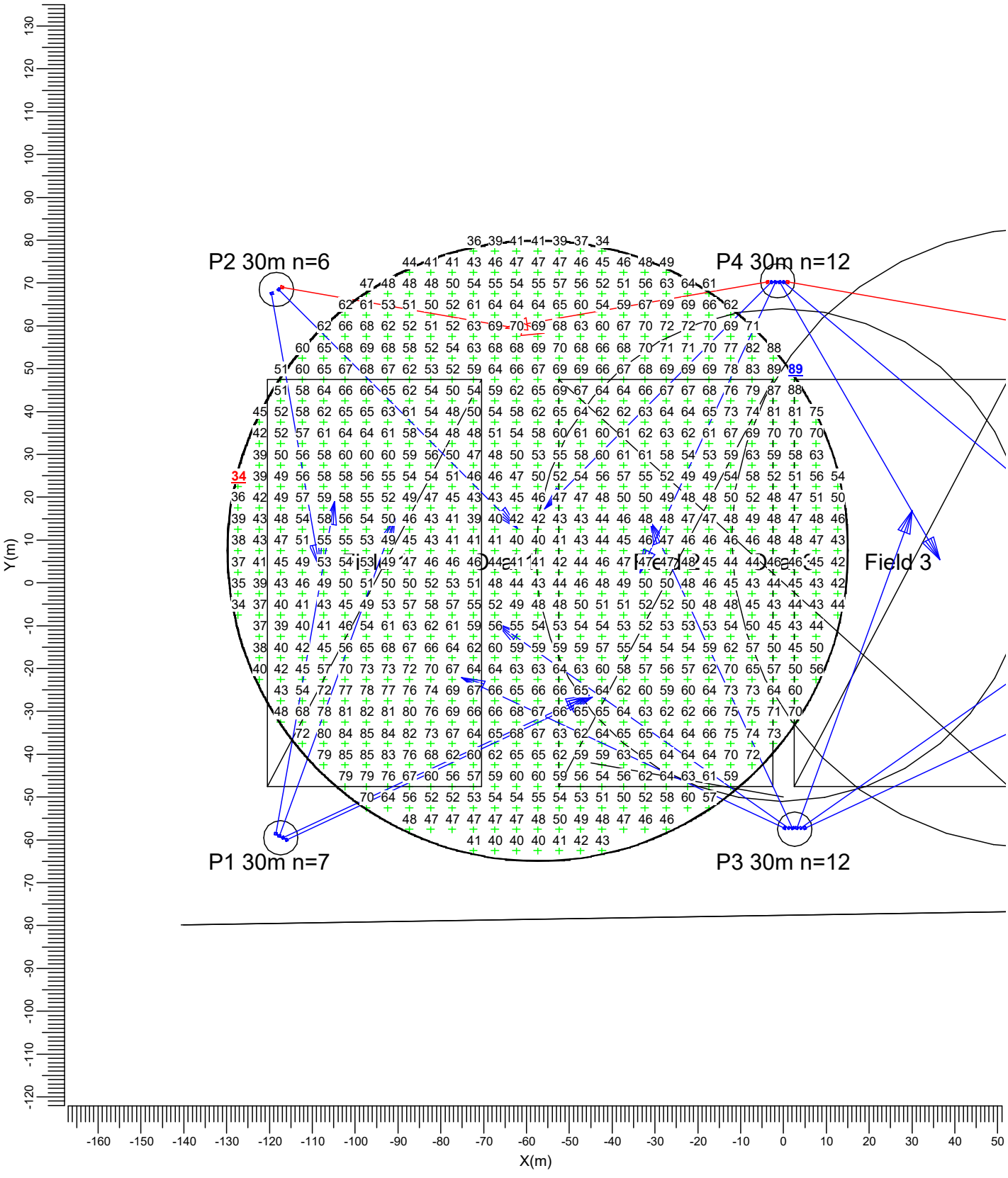


Maximum	Project maintenance factor	Scale
47.5	1.00	1:750

3.25 Oval 1 50 lx: Graphical Table

Training 50 lx

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

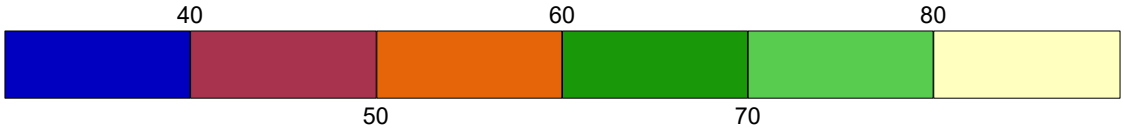


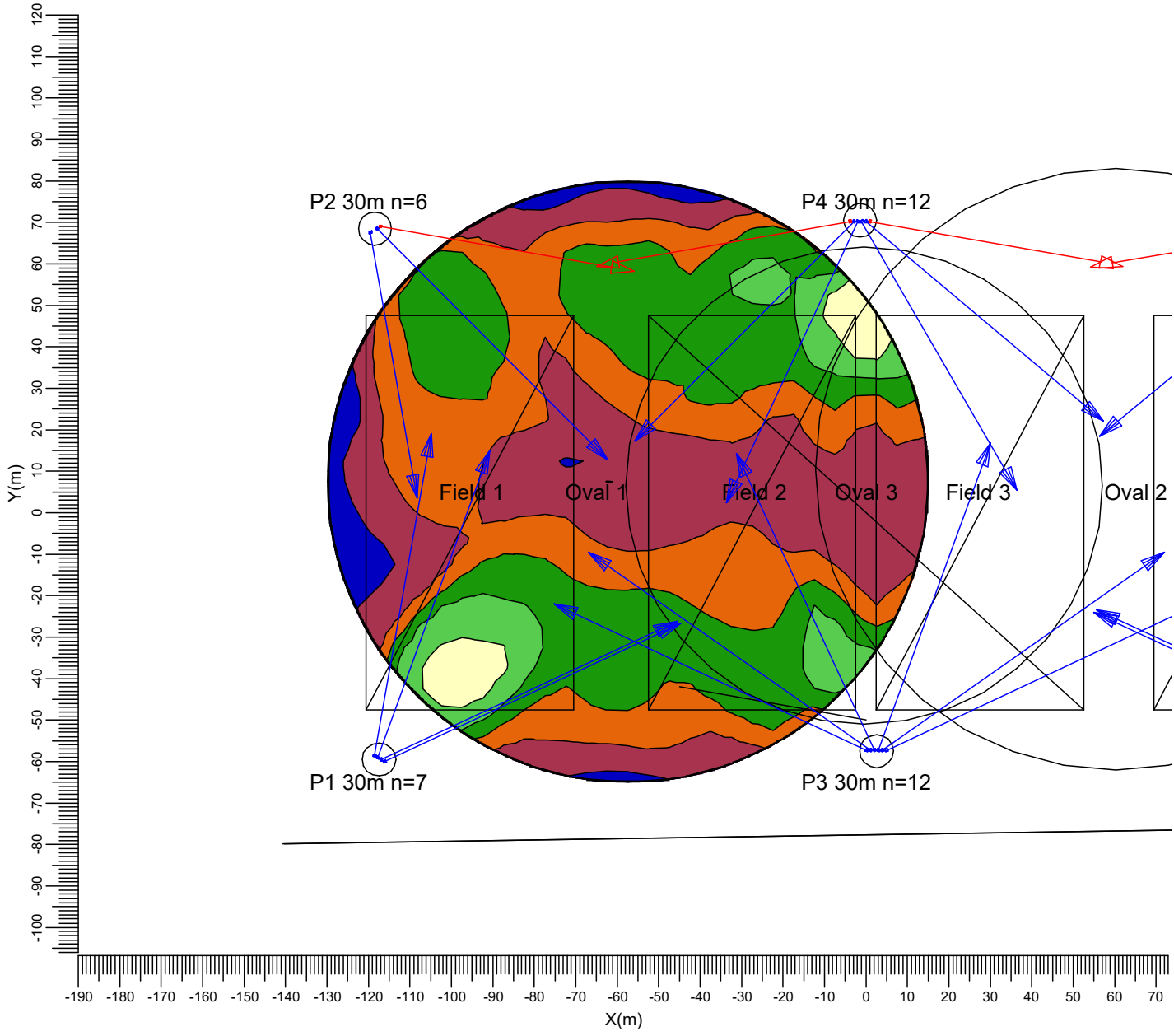
Average	Min/Ave	Min/Max	Project maintenance factor	Scale
56.6	0.59	0.38	0.86	1:1250

3.26 Oval 1 50 lx: Filled Iso Contour

Training 50 lx

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



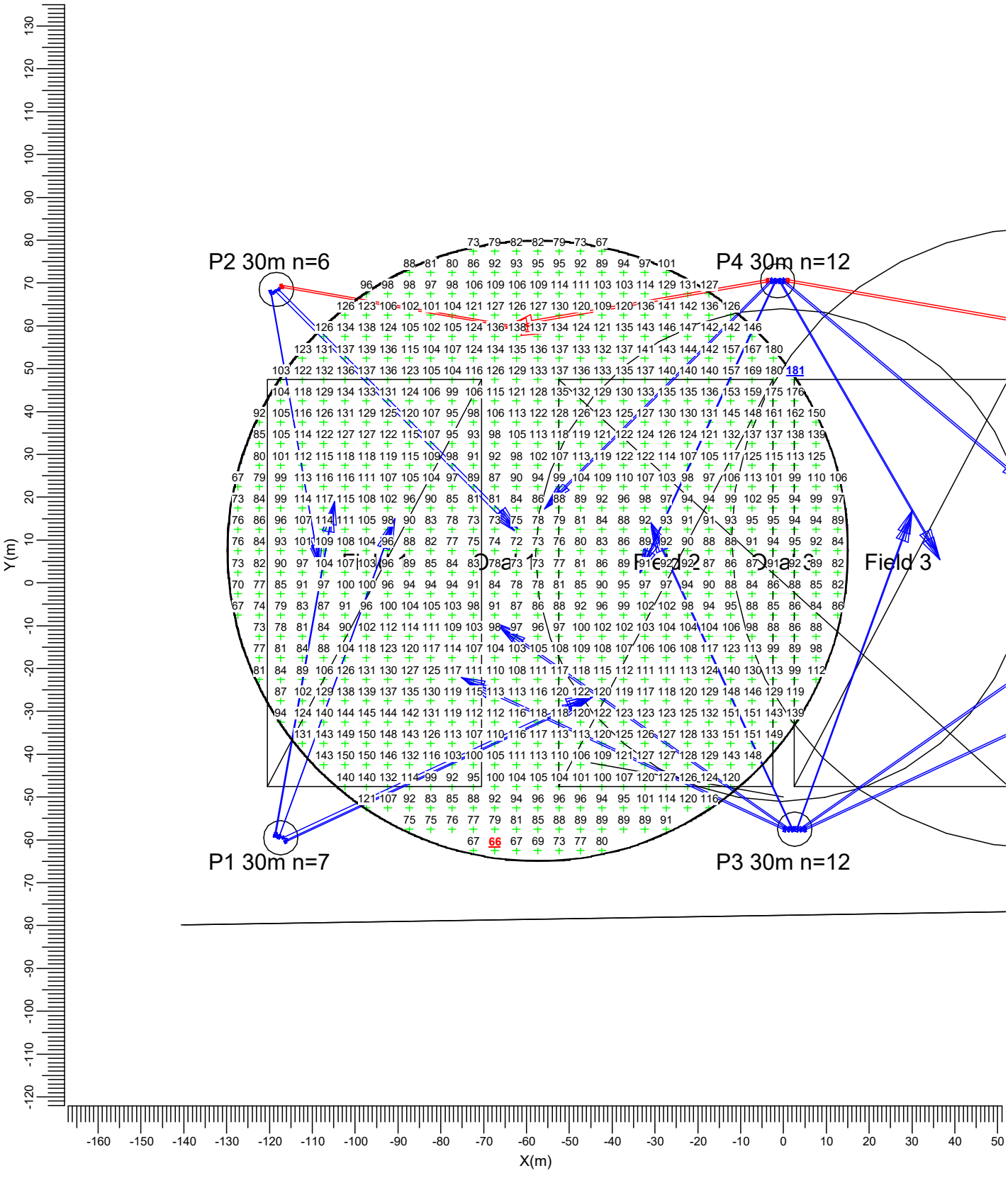


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
56.6	0.59	0.38	0.86	1:1500

3.27 Oval 1 100 lx: Graphical Table

Comp 100 lx

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

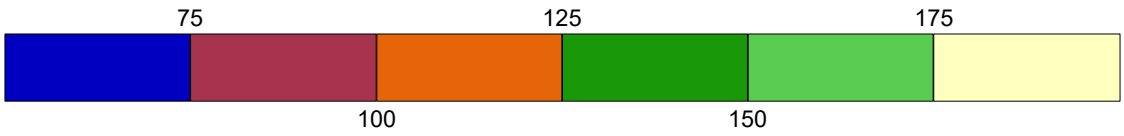


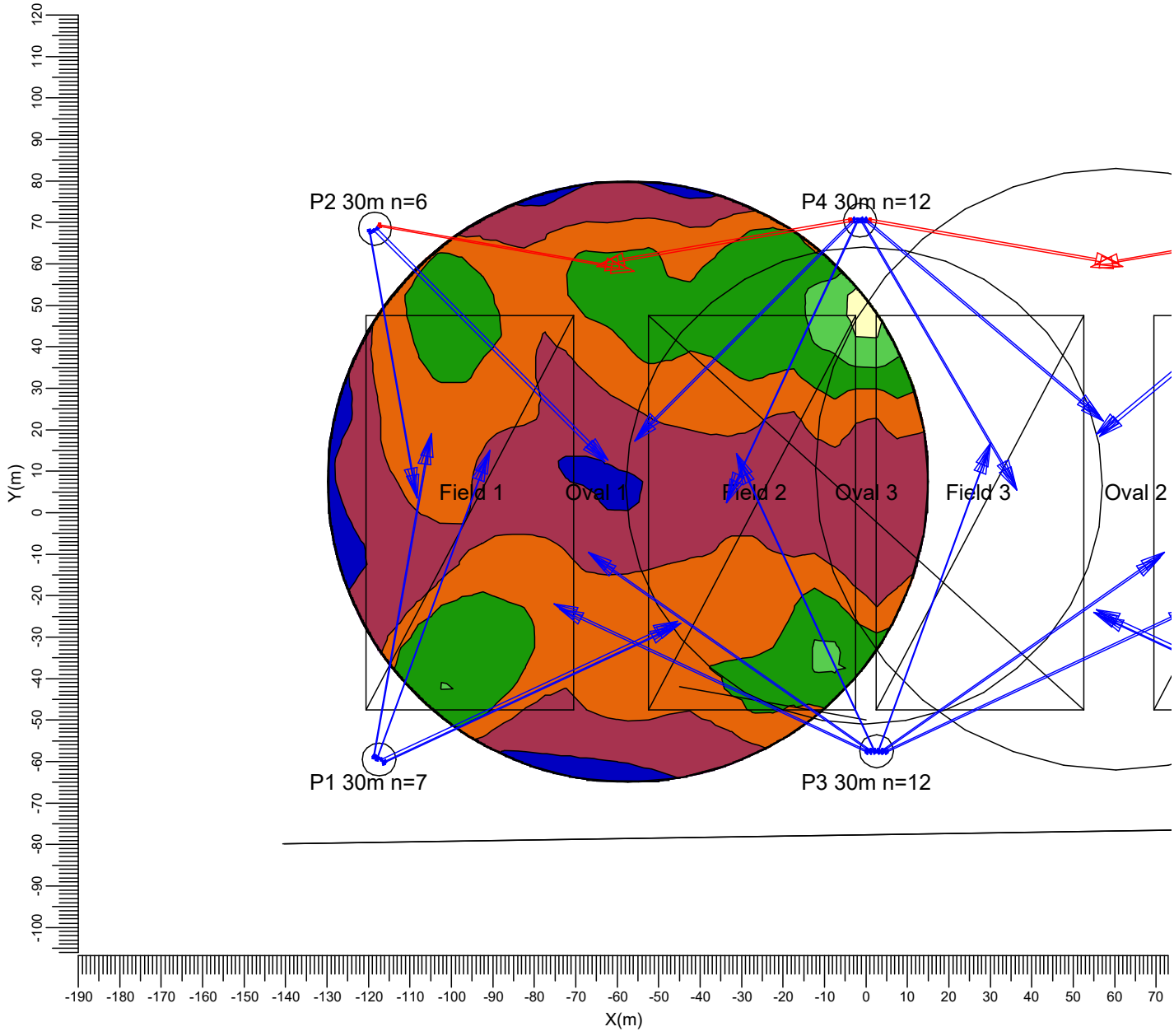
Average	Min/Ave	Min/Max	Project maintenance factor	Scale
109	0.61	0.37	0.86	1:1250

3.28 Oval 1 100 lx: Filled Iso Contour

Comp 100 lx

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



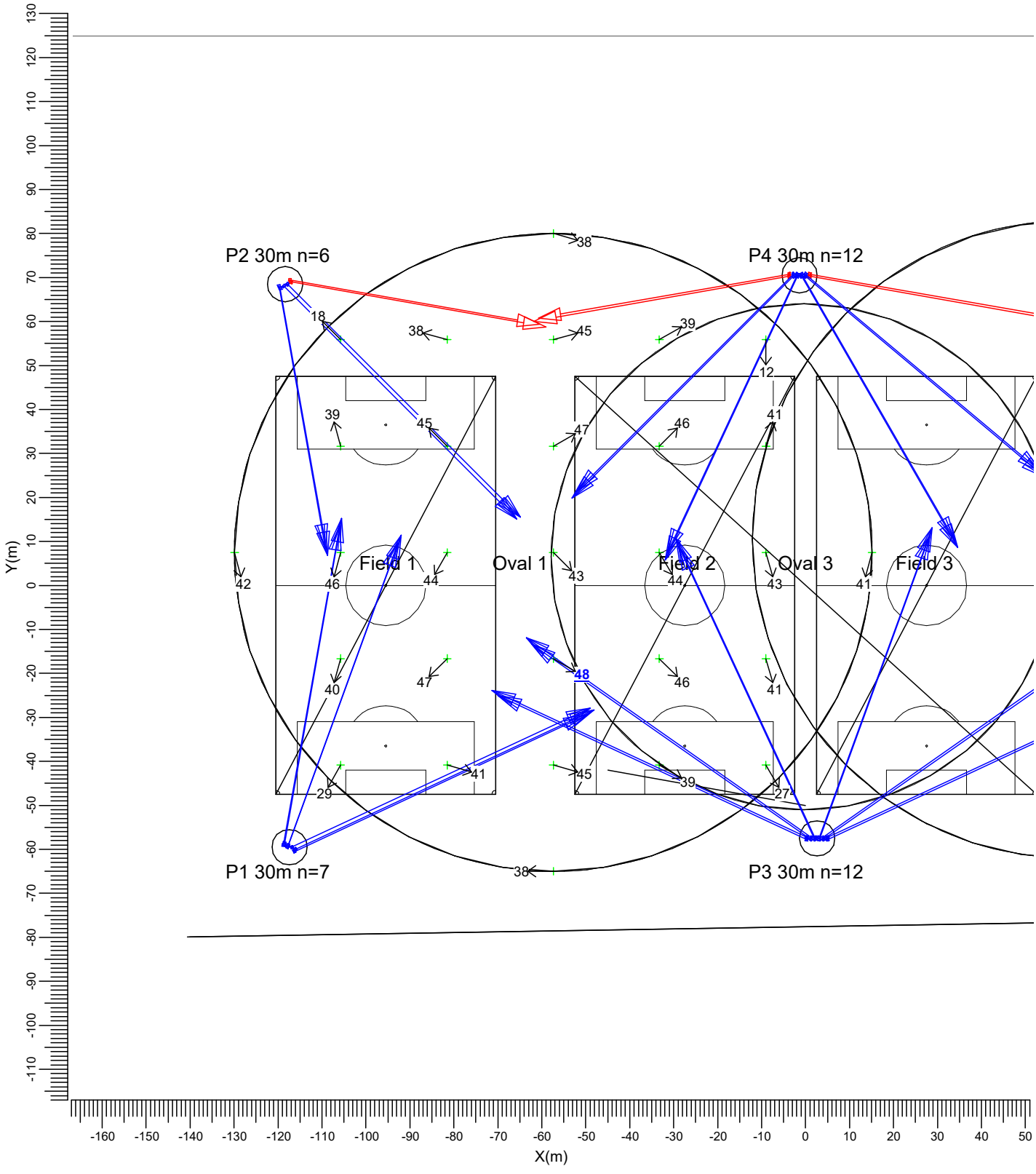


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
109	0.61	0.37	0.86	1:1500

3.29 Oval 1 100 lx GR: Graphical Table

All Initial

Grid of Observers : Oval 1 GR@1.5m
Calculation : Glare Rating
Grid for Background Luminance: Oval 1 (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg

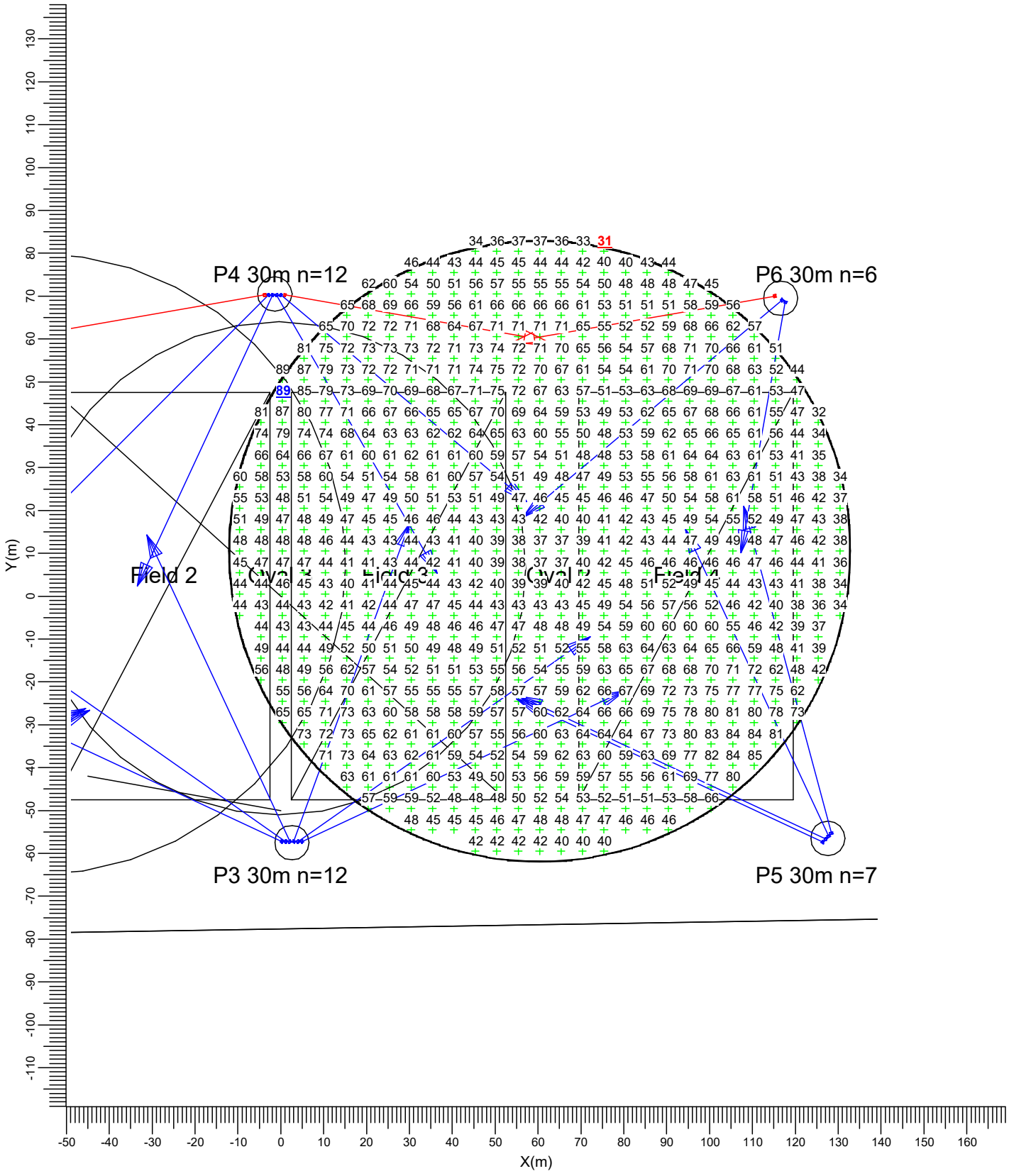


Maximum	Project maintenance factor	Scale
48.3	1.00	1:1250

3.30 Oval 2 50 lx: Graphical Table

Training 50 lx

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

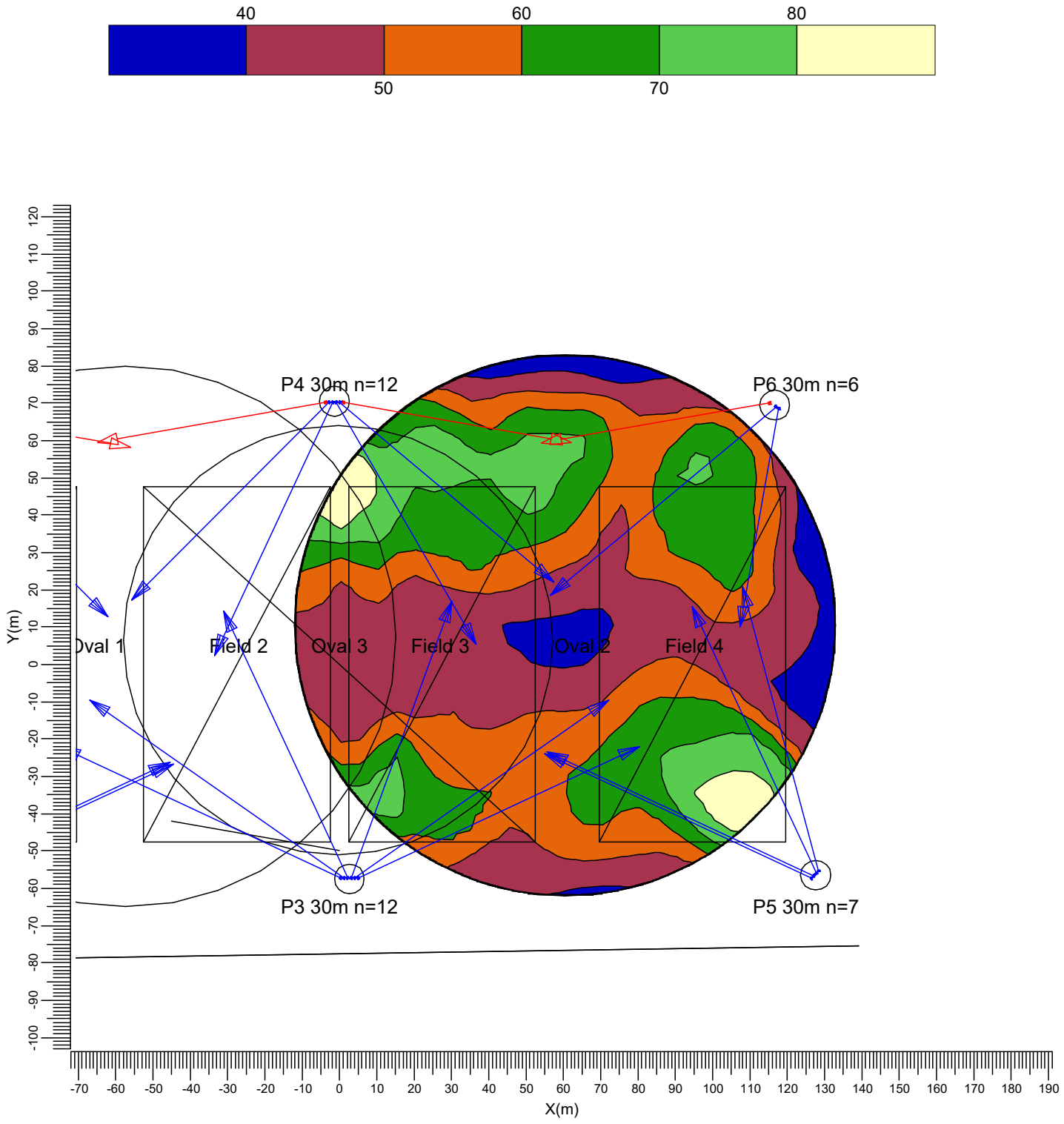


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
55.6	0.55	0.34	0.86	1:1250

3.31 Oval 2 50 lx: Filled Iso Contour

Training 50 lx

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

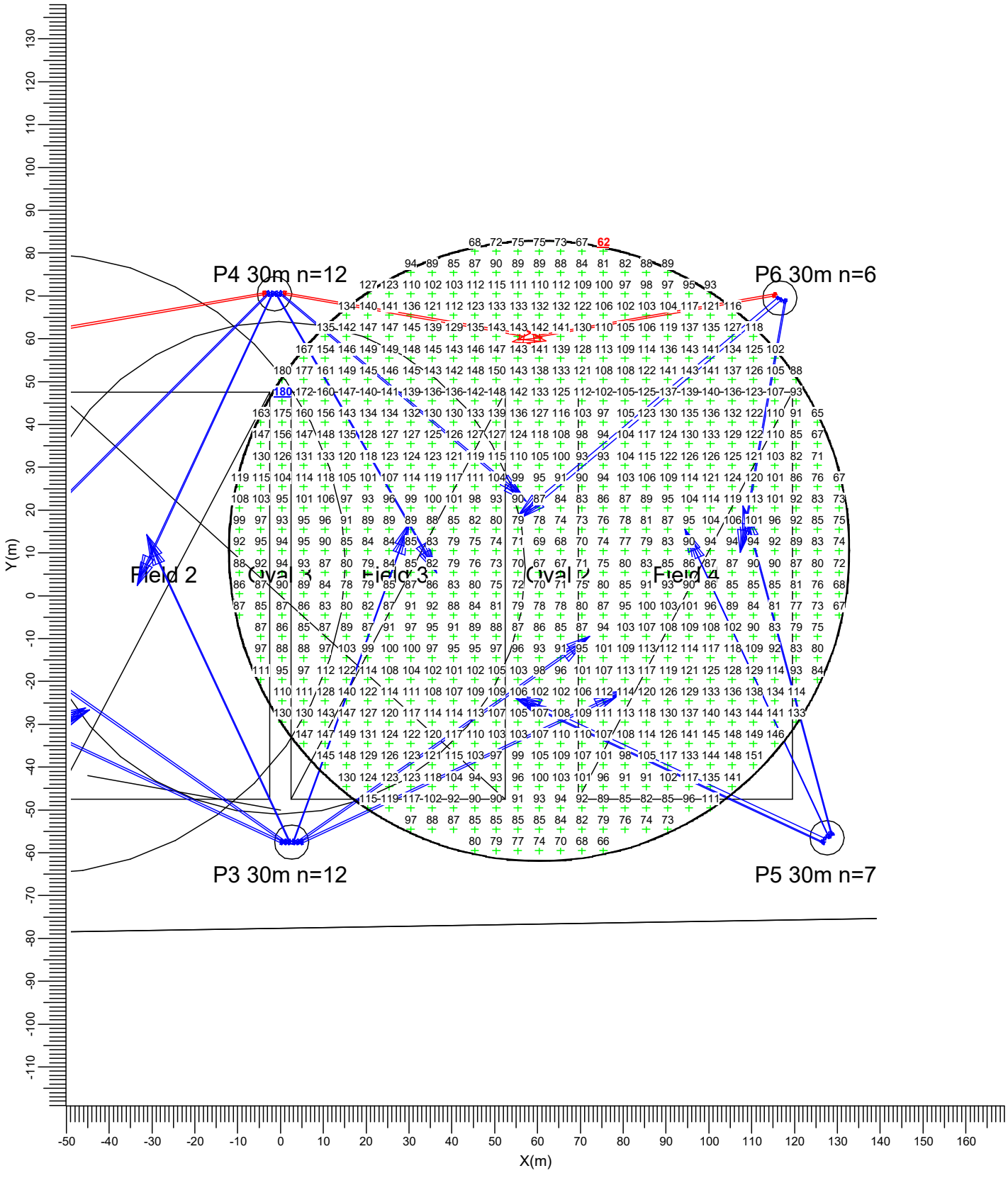


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
55.6	0.55	0.34	0.86	1:1500

3.32 Oval 2 100 lx: Graphical Table

Comp 100 lx

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

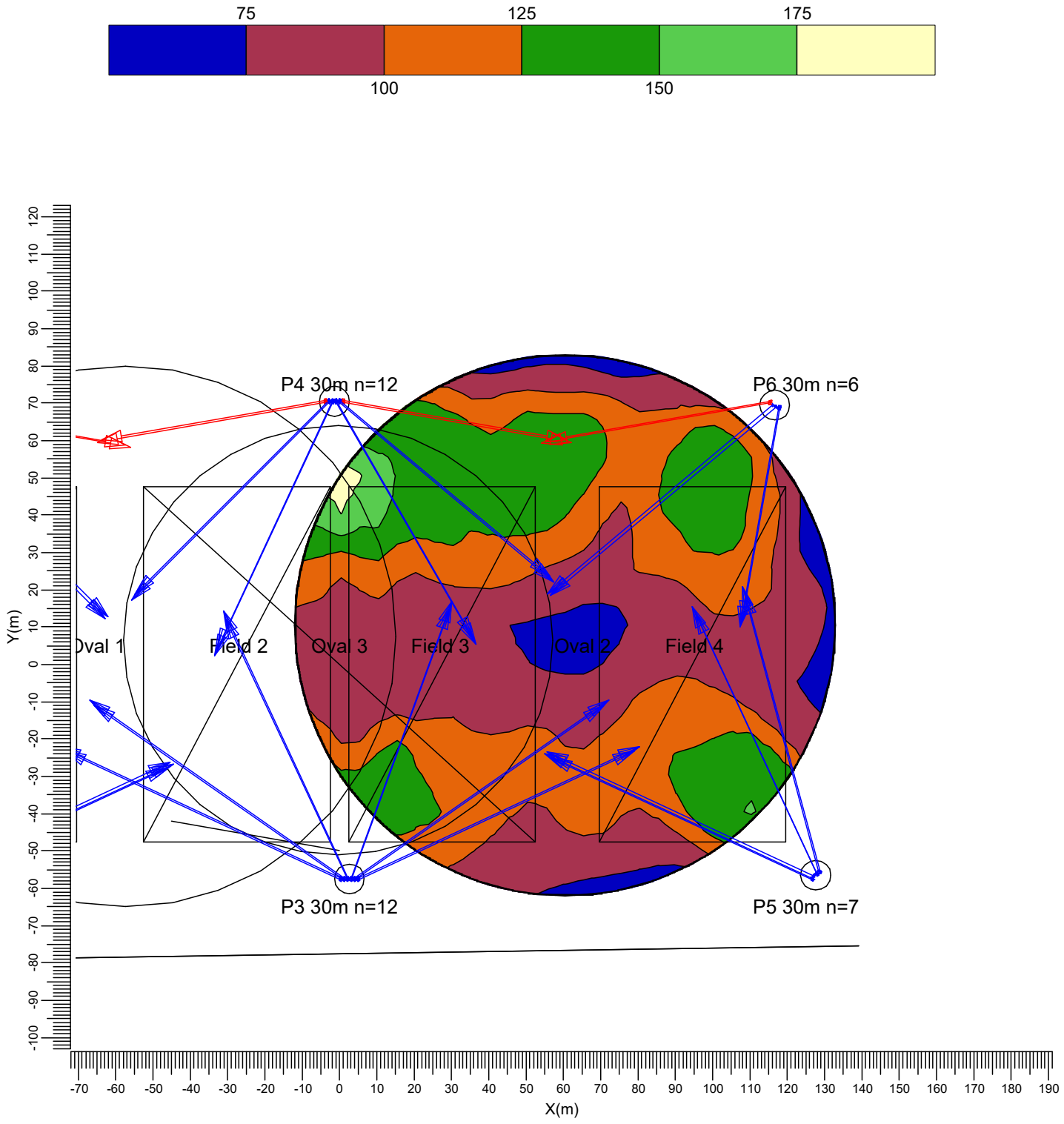


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
107	0.58	0.34	0.86	1:1250

3.33 Oval 2 100 lx: Filled Iso Contour

Comp 100 lx

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

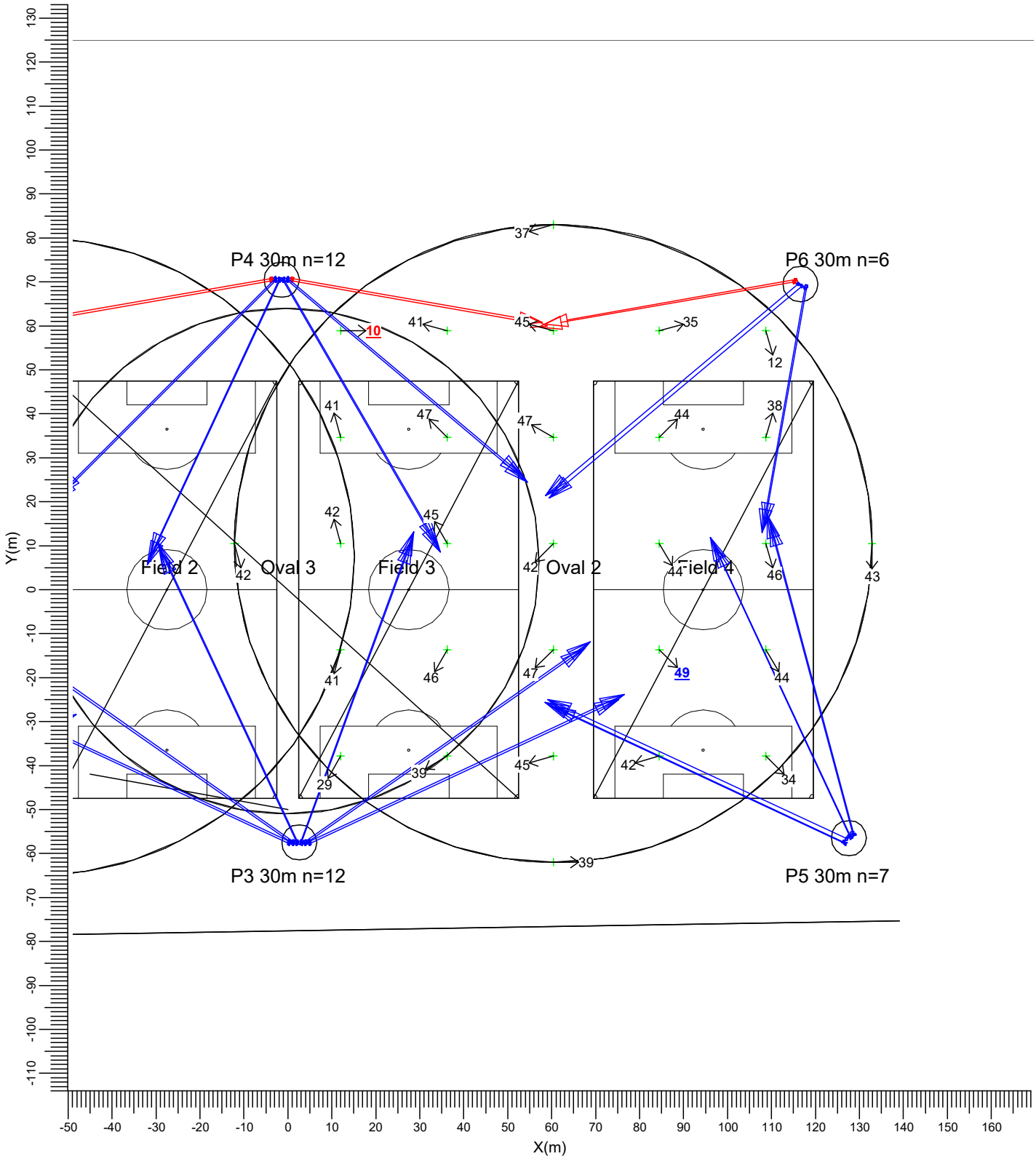


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
107	0.58	0.34	0.86	1:1500

3.34 Oval 2 100 lx GR: Graphical Table

All Initial

Grid of Observers : Oval 2 GR@1.5m
Calculation : Glare Rating
Grid for Background Luminance: Oval 2 (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



Maximum
49.0

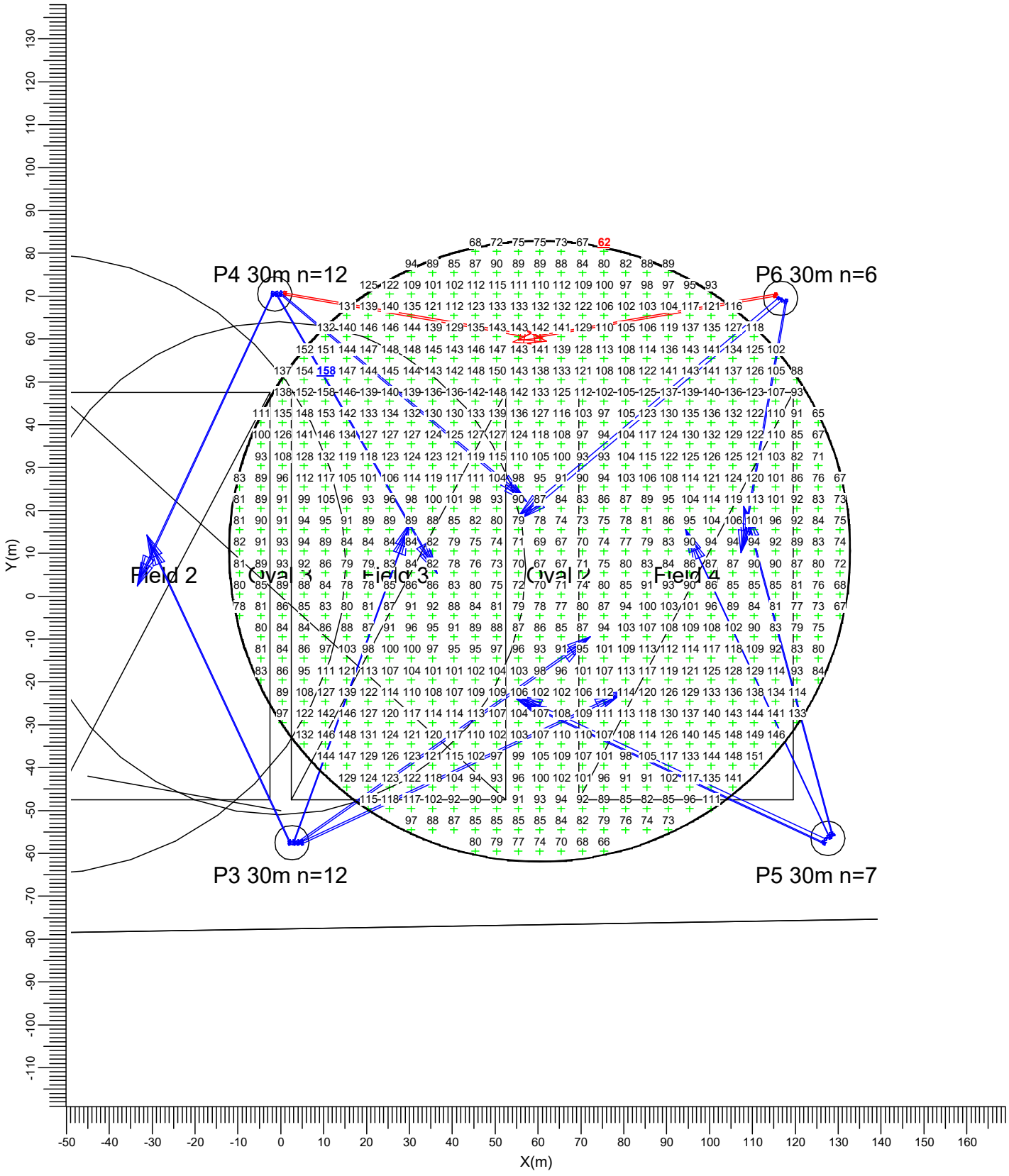
Project maintenance factor
1.00

Scale
1:1250

3.35 Oval 2 100 lx only: Graphical Table

Oval 2 100 lx

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

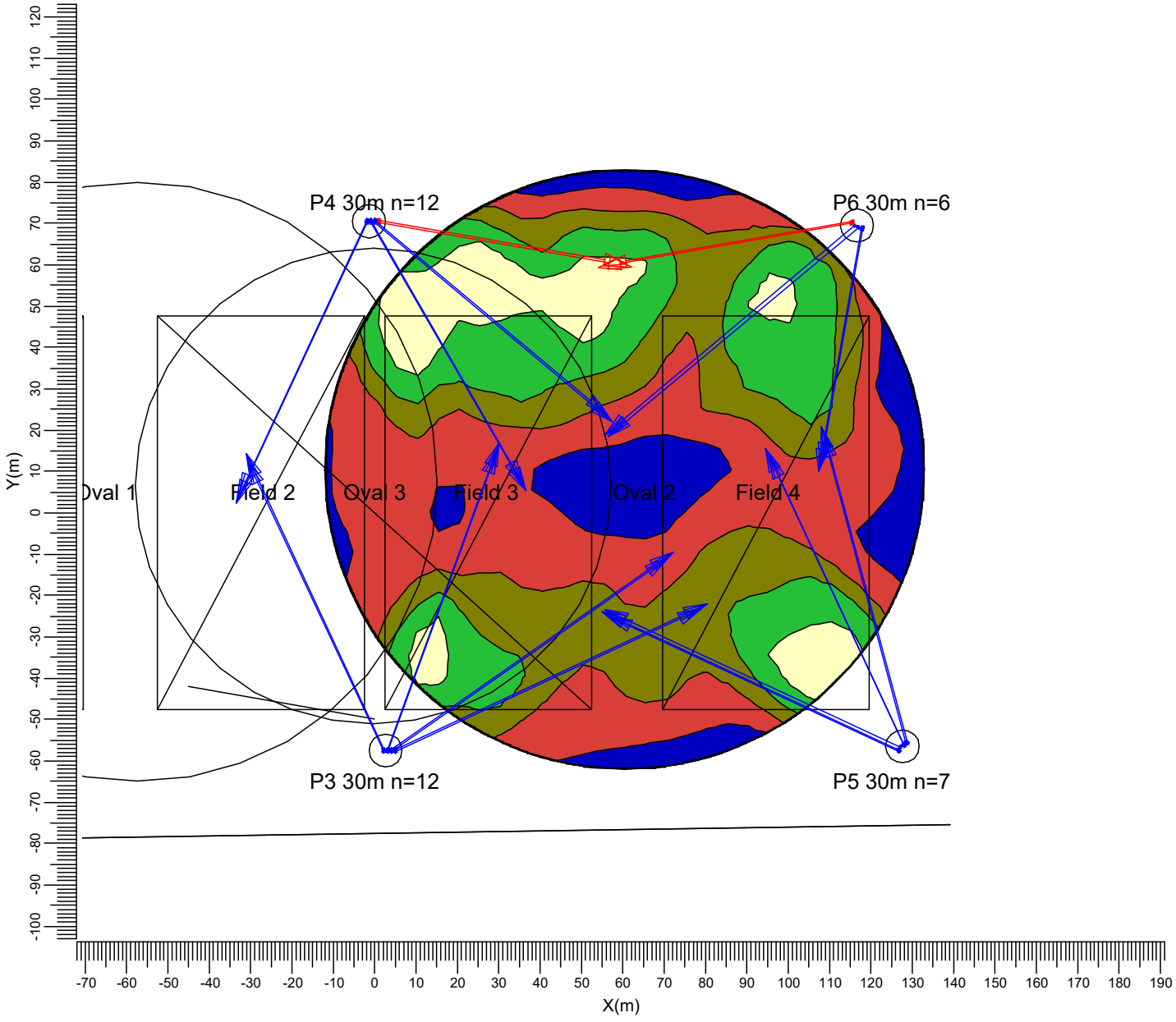


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
106	0.58	0.39	0.86	1:1250

3.36 Oval 2 100 lx only: Filled Iso Contour

Oval 2 100 lx

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



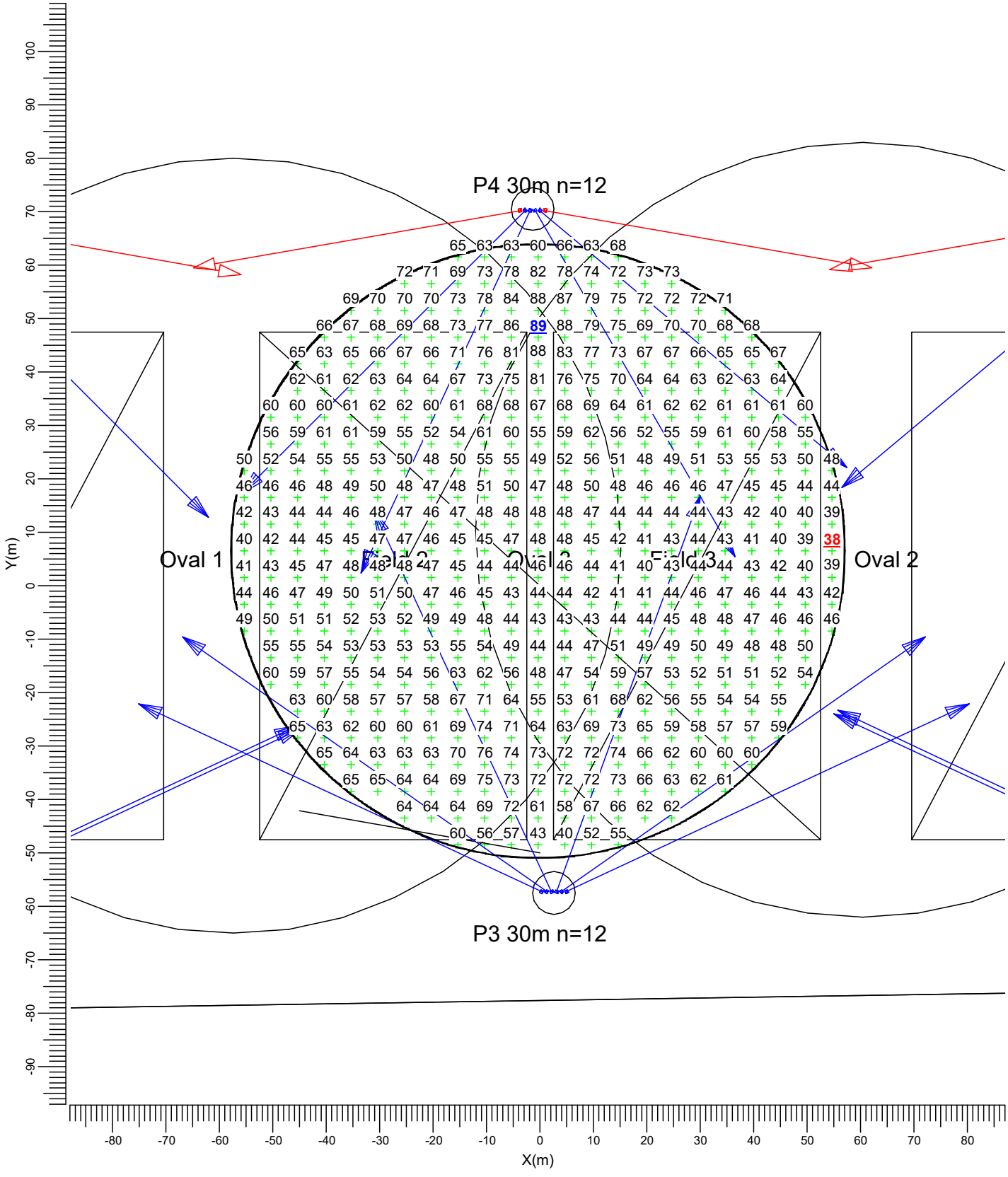
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
106	0.58	0.39	0.86	1:1500

3.37 Oval 3 50 lx: Graphical Table

Training 50 lx

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

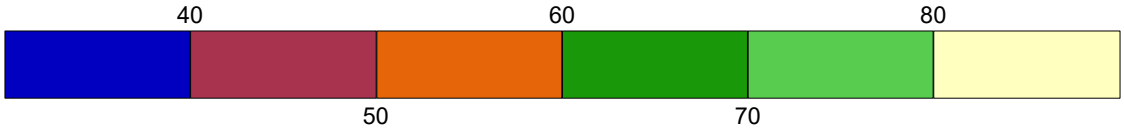


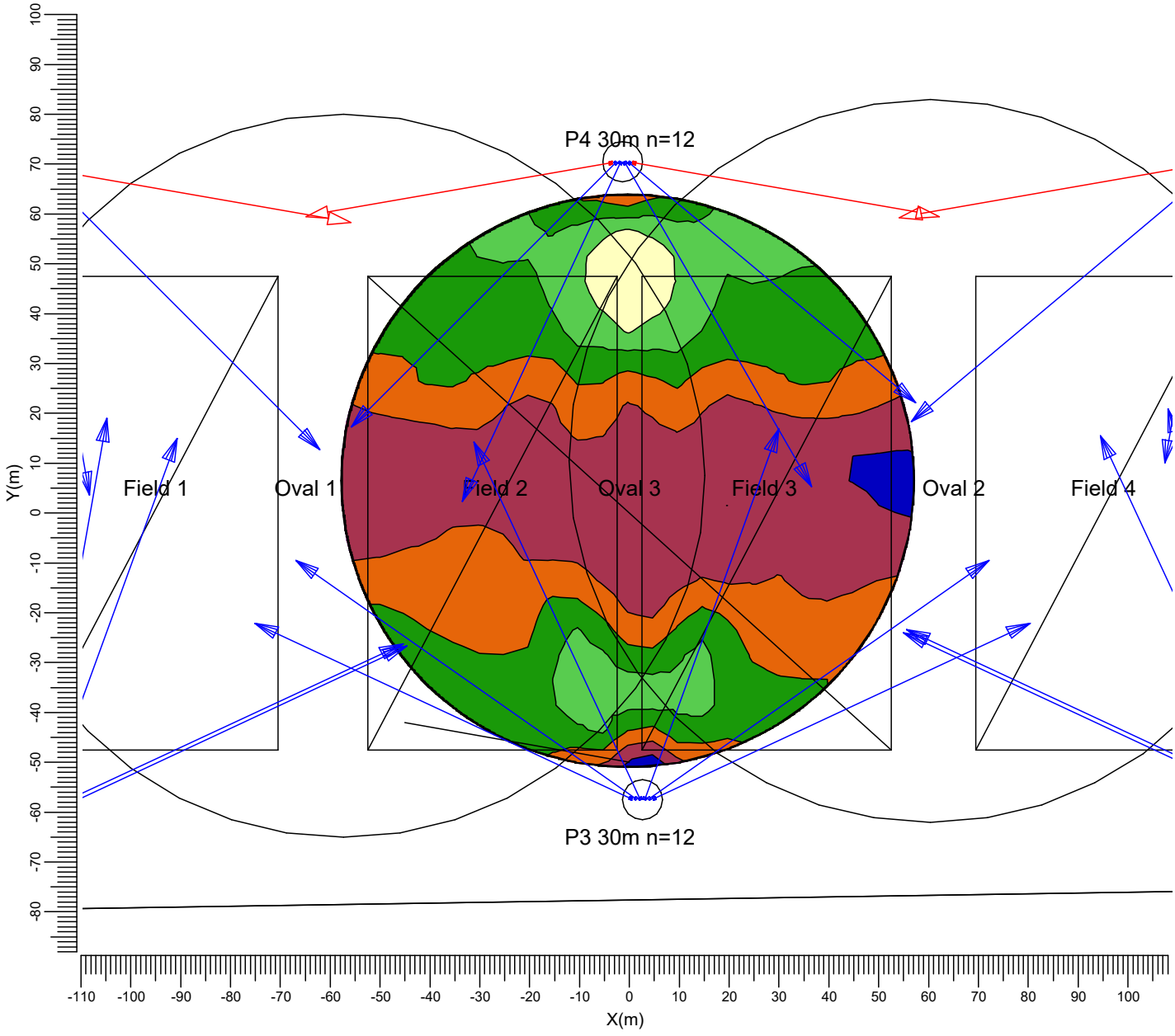
Average	Min/Ave	Min/Max	Project maintenance factor	Scale
57.0	0.67	0.43	0.86	1:1000

3.38 Oval 3 50 lx: Filled Iso Contour

Training 50 lx

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





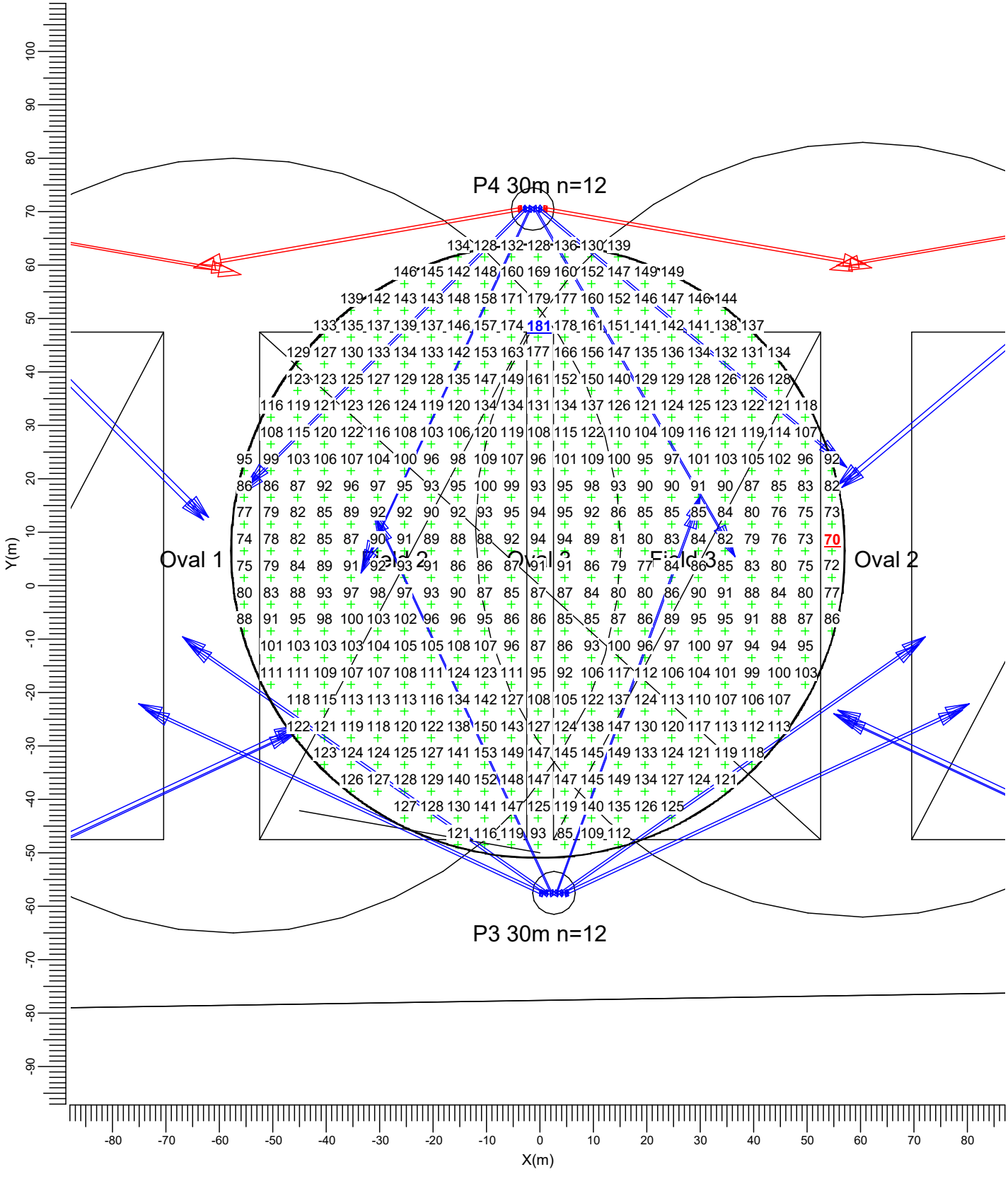
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Min/Ave	Min/Max	Project maintenance factor	Scale
57.0	0.67	0.43	0.86	1:1250

3.39 Oval 3 100 lx: Graphical Table

Comp 100 lx

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

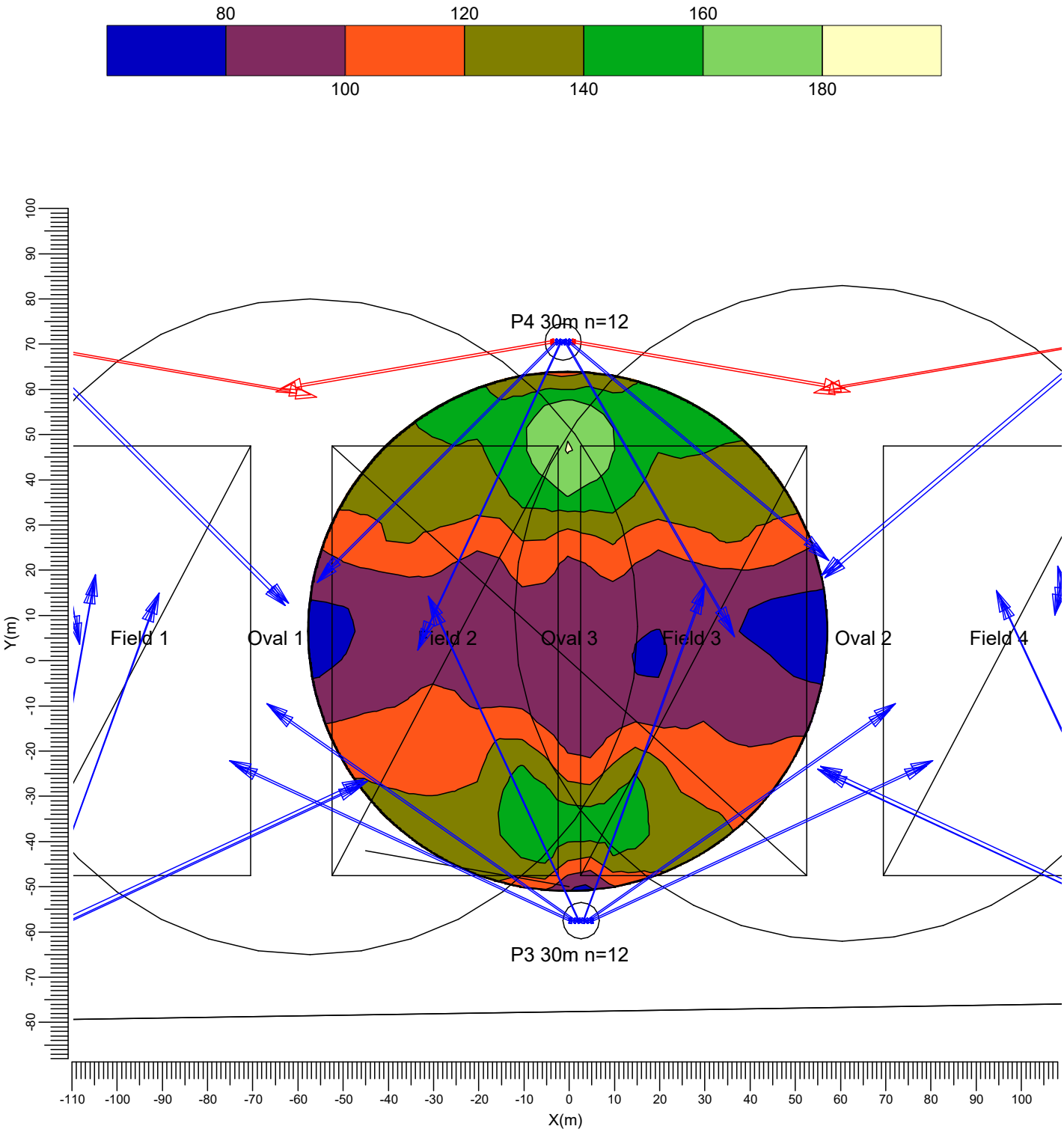


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
113	0.62	0.39	0.86	1:1000

3.40 Oval 3 100 lx: Filled Iso Contour

Comp 100 lx

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

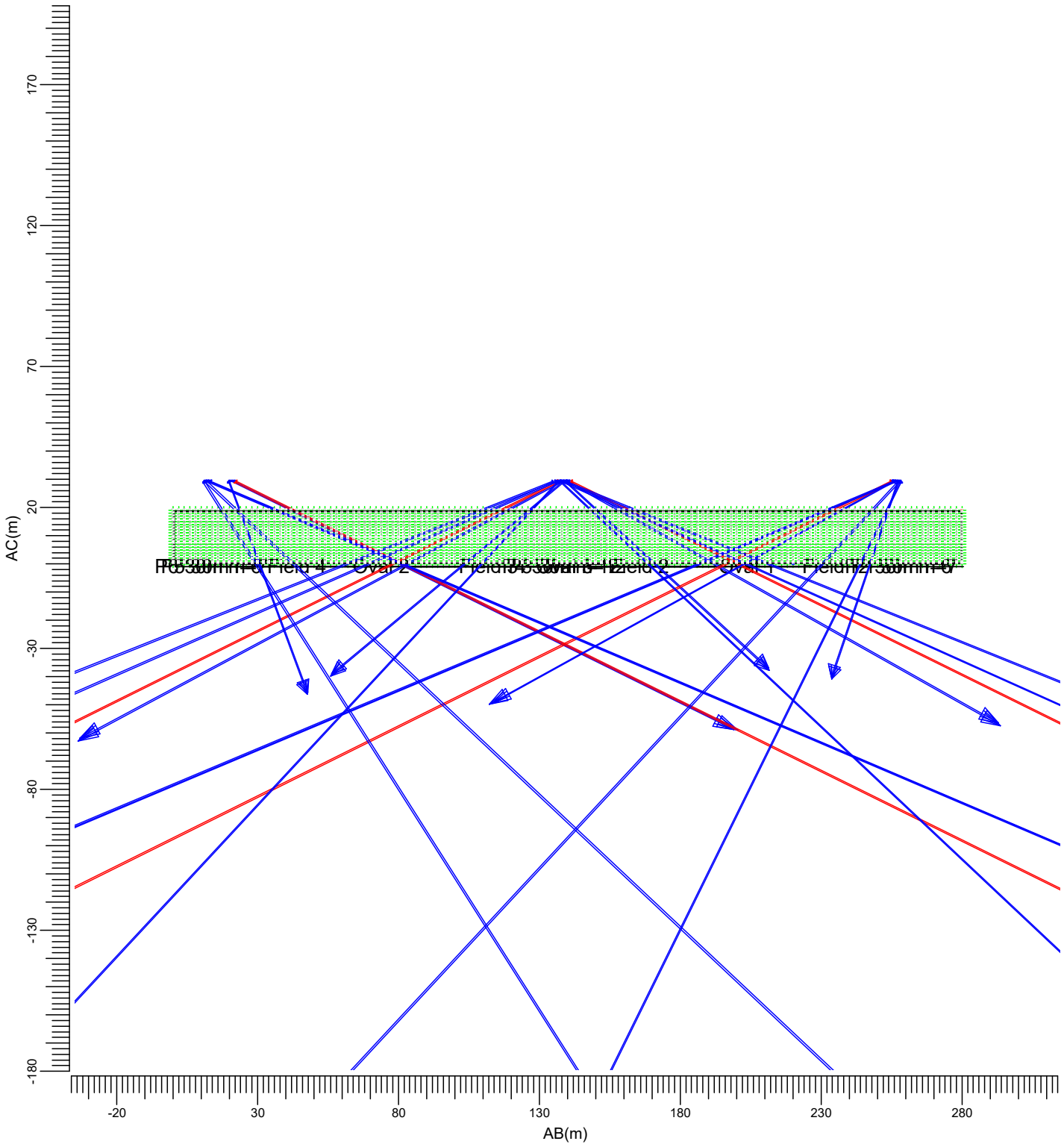


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
113	0.62	0.39	0.86	1:1250

3.41 South Bdy Ev All: Graphical Table

All Initial

Grid : South Bdy
Calculation : Surface Illuminance (lux)



(140.00, -75.40, 20.00) C-----D (-140.00, -79.80, 20.00)
| |
(140.00, -75.40, 1.00) A-----B (-140.00, -79.80, 1.00)

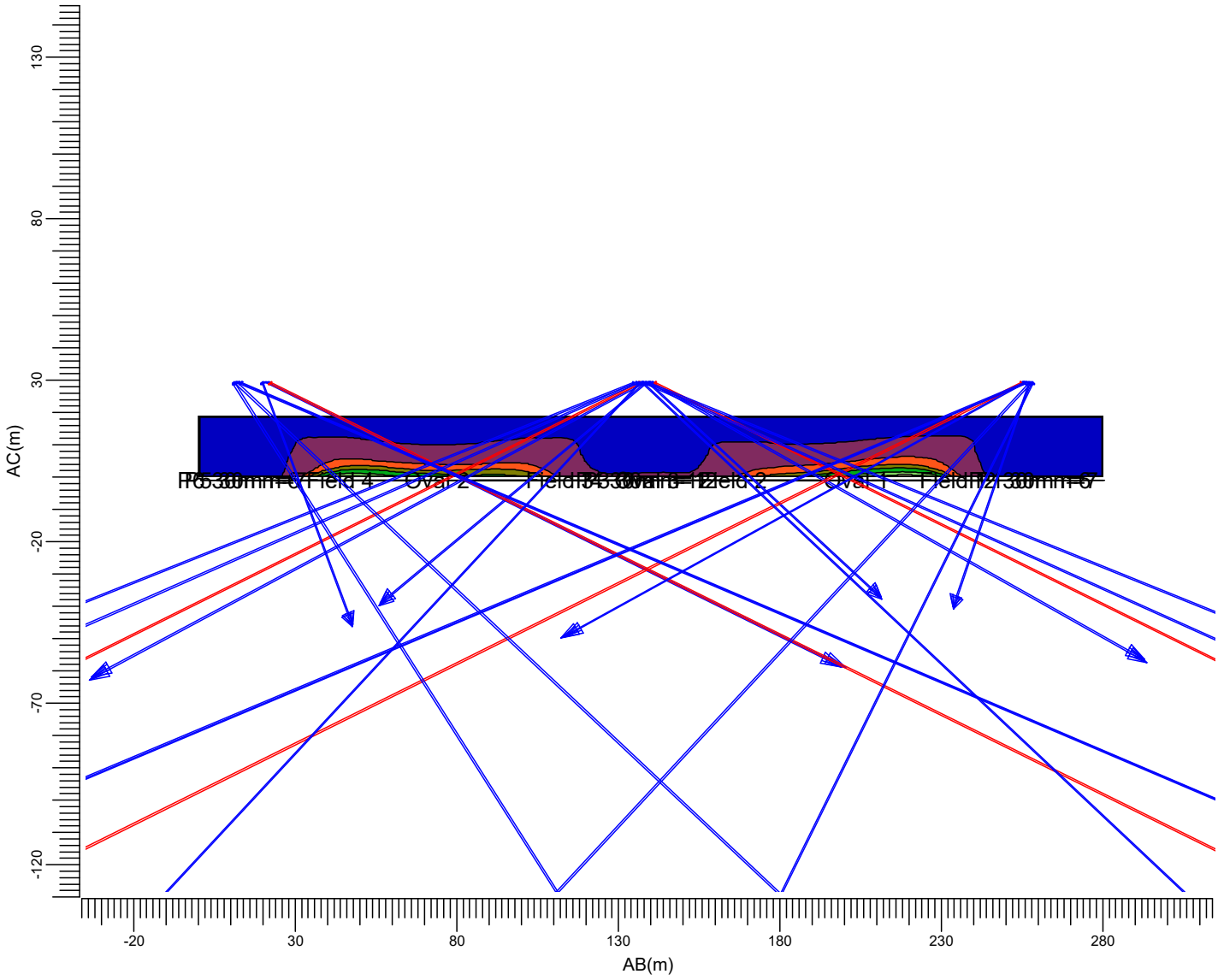
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Maximum	Project maintenance factor	Scale
1.15	6.84	1.00	1:2000

3.42 South Bdy Ev All: Filled Iso Contour

All Initial

Grid : South Bdy
Calculation : Surface Illuminance (lux)



(140.00, -75.40, 20.00) C-----D (-140.00, -79.80, 20.00)
| |
(140.00, -75.40, 1.00) A-----B (-140.00, -79.80, 1.00)

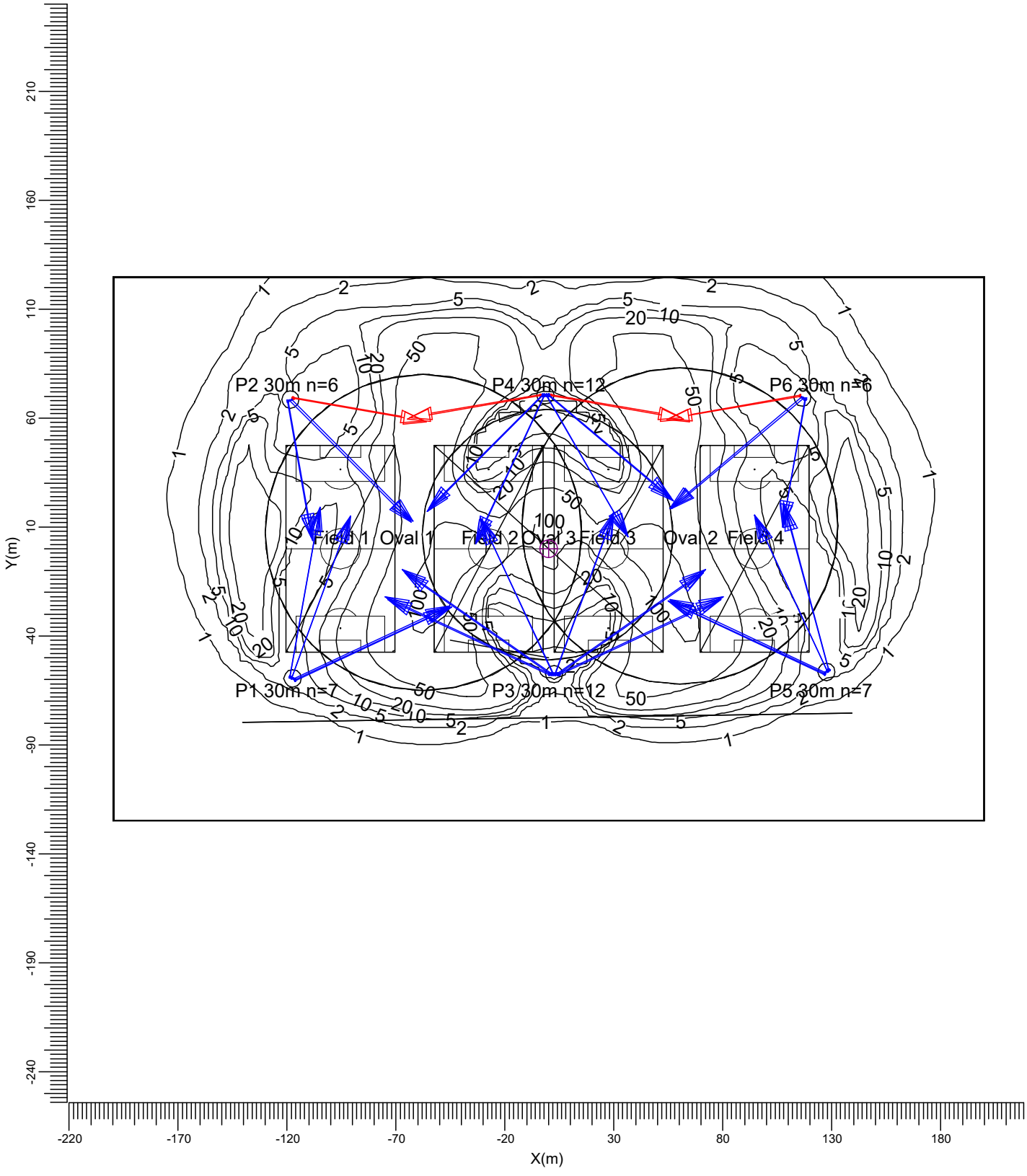
BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Maximum	Project maintenance factor	Scale
1.15	6.84	1.00	1:2000

3.43 Surrounds Ev All: Iso Contour

All Initial

Grid : Surrounds at Z = -0.00 m
Calculation : Illuminance towards Centre (lux)
Height above grid : 1.00 m



BVP525 T30 50K A-NBLT/30 BVP525 T30 50K A-NBLO/30

Average	Project maintenance factor	Scale
17.1	1.00	1:2500

4. Luminaire Details

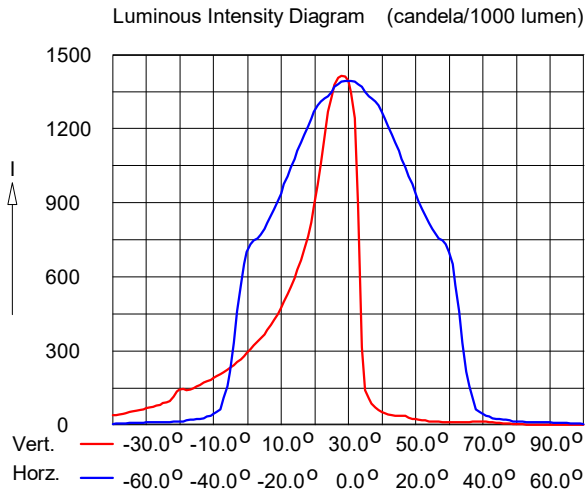
4.1 Project Luminaires

OptiVision LED
BVP525 T30 50K 1xLED1930/757 A-NBLT/30

Light output ratios

DLOR	:	0.74
ULOR	:	0.00
TLOR	:	0.74
Ballast	:	N/A
Lamp flux	:	183011 lm
Luminaire wattage	:	1301.5 W
Measurement code	:	LVA1505002

Note: Luminaire data not from database.

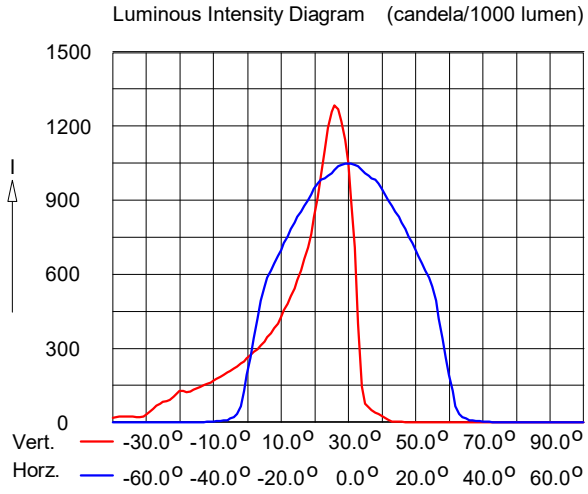


OptiVision LED
BVP525 T30 50K 1xLED1930/757 A-NBLO/30

Light output ratios

DLOR	:	0.52
ULOR	:	0.00
TLOR	:	0.52
Ballast	:	N/A
Lamp flux	:	183011 lm
Luminaire wattage	:	1301.5 W
Measurement code	:	LVA1409003

Note: Luminaire data not from database.



5. Installation Data

5.1 Legends

Project Luminaires:

Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
A	8	BVP525 T30 50K A-NBLT/30	1 * LED1930/757	1 * 183011
B	42	BVP525 T30 50K A-NBLO/30	1 * LED1930/757	1 * 183011

Arrangements:

Code	Arrangement
1	P1 30m
2	P2 30m
3	P3 30m
4	P4 30m
5	P5 30m
6	P6 30m

Switching Modes:

Code	Switching Mode
1	Training 50 lx
2	Comp 100 lx
3	Oval 1 100 lx
4	Oval 2 100 lx
5	All Initial

5.2 Luminaire Positioning and Orientation

Including Aiming Points:

Qty and Code	Position			Aiming Points			Arr.	Switching Modes				
	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)		1	2	3	4	5
1 * B	-118.77	-59.02	29.71	-105.33	17.20	0.00	1	-	+	+	-	+
1 * B	-118.50	-58.56	30.25	-104.82	19.05	0.00	1	+	+	+	-	+
1 * B	-117.94	-59.49	29.71	-91.47	13.24	0.00	1	-	+	+	-	+
1 * B	-117.68	-59.03	30.25	-90.73	15.02	0.00	1	+	+	+	-	+
1 * B	-116.86	-59.51	30.25	-45.44	-26.21	0.00	1	+	+	+	-	+
1 * B	-116.30	-60.44	29.71	-46.15	-27.73	0.00	1	-	+	+	-	+
1 * B	-116.03	-59.98	30.25	-44.61	-26.68	0.00	1	+	+	+	-	+
1 * B	-119.77	68.02	29.71	-108.71	5.27	-0.00	2	-	+	+	-	+
1 * B	-119.50	67.56	30.25	-108.24	3.67	0.00	2	+	+	+	-	+
1 * B	-118.68	68.03	30.25	-62.96	12.31	0.00	2	-	+	+	-	+
1 * B	-117.86	68.51	30.25	-62.14	12.79	0.00	2	+	+	+	-	+
1 * A	-117.30	69.44	29.71	-57.31	58.86	0.00	2	-	+	+	-	+
1 * A	-117.03	68.98	30.25	-55.95	58.21	0.00	2	+	+	+	-	+
1 * B	0.22	-57.77	29.71	-73.76	-23.27	0.00	3	-	+	+	-	+
1 * B	0.22	-57.23	30.25	-75.10	-22.11	0.00	3	+	+	+	-	+
1 * B	1.18	-57.77	29.71	-65.69	-10.95	0.00	3	-	+	+	-	+
1 * B	1.18	-57.23	30.25	-66.90	-9.56	0.00	3	+	+	+	-	+
1 * B	2.13	-57.77	29.71	-30.58	12.38	0.00	3	-	+	+	+	+
1 * B	2.13	-57.23	30.25	-31.17	14.19	0.00	3	+	+	+	+	+

Qty and Code	Position			Aiming Points			Arr.	Switching Modes				
	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)		1	2	3	4	5
1 * B	3.08	-57.77	29.71	29.55	14.96	0.00	3	-	+	+	+	+
1 * B	3.08	-57.23	30.25	30.03	16.82	0.00	3	+	+	+	+	+
1 * B	4.02	-57.77	29.71	70.89	-10.95	0.00	3	-	+	-	+	+
1 * B	4.02	-57.23	30.25	72.10	-9.56	0.00	3	+	+	-	+	+
1 * B	4.98	-57.77	29.71	78.96	-23.27	0.00	3	-	+	-	+	+
1 * B	4.98	-57.23	30.25	80.30	-22.11	0.00	3	+	+	-	+	+
1 * A	-3.78	70.23	30.25	-64.86	59.46	0.00	4	+	+	+	-	+
1 * A	-3.78	70.77	29.71	-63.77	60.19	0.00	4	-	+	+	-	+
1 * B	-2.83	70.23	30.25	-55.77	17.29	0.00	4	+	+	+	-	+
1 * B	-2.83	70.77	29.71	-54.83	18.77	0.00	4	-	+	+	-	+
1 * B	-1.87	70.23	30.25	-33.51	2.37	0.00	4	+	+	+	+	+
1 * B	-1.87	70.77	29.71	-32.95	4.12	0.00	4	-	+	+	+	+
1 * B	-0.93	70.23	30.25	36.51	5.39	0.00	4	+	+	+	+	+
1 * B	-0.93	70.77	29.71	35.84	7.09	0.00	4	-	+	+	+	+
1 * B	0.02	70.23	30.25	57.37	22.10	0.00	4	+	+	-	+	+
1 * B	0.02	70.77	29.71	56.35	23.50	0.00	4	-	+	-	+	+
1 * A	0.98	70.23	30.25	62.06	59.46	0.00	4	+	+	-	+	+
1 * A	0.98	70.77	29.71	60.97	60.19	0.00	4	-	+	-	+	+
1 * B	126.40	-57.32	30.25	54.98	-24.02	0.00	5	+	+	-	+	+
1 * B	126.78	-57.70	29.71	56.63	-24.99	0.00	5	-	+	-	+	+
1 * B	127.08	-56.65	30.25	55.66	-23.35	0.00	5	+	+	-	+	+
1 * B	127.75	-55.98	30.25	94.45	15.44	0.00	5	+	+	-	+	+
1 * B	128.12	-56.35	29.71	95.41	13.80	0.00	5	-	+	-	+	+
1 * B	128.42	-55.30	30.25	108.02	20.82	0.00	5	+	+	-	+	+
1 * B	128.80	-55.68	29.71	108.77	19.08	0.00	5	-	+	-	+	+
1 * A	115.23	69.98	30.25	54.15	59.21	0.00	6	+	+	-	+	+
1 * A	115.50	70.44	29.71	55.51	59.86	0.00	6	-	+	-	+	+
1 * B	116.06	69.51	30.25	55.69	18.86	0.00	6	-	+	-	+	+
1 * B	116.88	69.03	30.25	56.51	18.38	0.00	6	+	+	-	+	+
1 * B	117.70	68.56	30.25	107.39	10.09	0.00	6	+	+	-	+	+
1 * B	117.97	69.02	29.71	107.84	11.60	0.00	6	-	+	-	+	+

Including Aiming Angles:

Qty and Code	Position			Aiming Angles			Arr.	Switching Modes				
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0		1	2	3	4	5
1 * B	-118.77	-59.02	29.71	80.0	69.0	0.0	1	-	+	+	-	+
1 * B	-118.50	-58.56	30.25	80.0	69.0	0.0	1	+	+	+	-	+
1 * B	-117.94	-59.49	29.71	70.0	69.0	0.0	1	-	+	+	-	+
1 * B	-117.68	-59.03	30.25	70.0	69.0	0.0	1	+	+	+	-	+
1 * B	-116.86	-59.51	30.25	25.0	69.0	0.0	1	+	+	+	-	+
1 * B	-116.30	-60.44	29.71	25.0	69.0	0.0	1	-	+	+	-	+
1 * B	-116.03	-59.98	30.25	25.0	69.0	0.0	1	+	+	+	-	+
1 * B	-119.77	68.02	29.71	-80.0	65.0	0.0	2	-	+	+	-	+
1 * B	-119.50	67.56	30.25	-80.0	65.0	0.0	2	+	+	+	-	+
1 * B	-118.68	68.03	30.25	-45.0	69.0	0.0	2	-	+	+	-	+
1 * B	-117.86	68.51	30.25	-45.0	69.0	0.0	2	+	+	+	-	+
1 * A	-117.30	69.44	29.71	-10.0	64.0	0.0	2	-	+	+	-	+
1 * A	-117.03	68.98	30.25	-10.0	64.0	0.0	2	+	+	+	-	+

Qty and Code	Position			Aiming Angles			Arr.	Switching Modes				
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0		1	2	3	4	5
1 * B	0.22	-57.77	29.71	155.0	70.0	0.0	3	-	+	+	-	+
1 * B	0.22	-57.23	30.25	155.0	70.0	0.0	3	+	+	+	-	+
1 * B	1.18	-57.77	29.71	145.0	70.0	0.0	3	-	+	+	-	+
1 * B	1.18	-57.23	30.25	145.0	70.0	0.0	3	+	+	+	-	+
1 * B	2.13	-57.77	29.71	115.0	69.0	0.0	3	-	+	+	+	+
1 * B	2.13	-57.23	30.25	115.0	69.0	0.0	3	+	+	+	+	+
1 * B	3.08	-57.77	29.71	70.0	69.0	0.0	3	-	+	+	+	+
1 * B	3.08	-57.23	30.25	70.0	69.0	0.0	3	+	+	+	+	+
1 * B	4.02	-57.77	29.71	35.0	70.0	0.0	3	-	+	-	+	+
1 * B	4.02	-57.23	30.25	35.0	70.0	0.0	3	+	+	-	+	+
1 * B	4.98	-57.77	29.71	25.0	70.0	0.0	3	-	+	-	+	+
1 * B	4.98	-57.23	30.25	25.0	70.0	0.0	3	+	+	-	+	+
1 * A	-3.78	70.23	30.25	-170.0	64.0	0.0	4	+	+	+	-	+
1 * A	-3.78	70.77	29.71	-170.0	64.0	0.0	4	-	+	+	-	+
1 * B	-2.83	70.23	30.25	-135.0	68.0	0.0	4	+	+	+	-	+
1 * B	-2.83	70.77	29.71	-135.0	68.0	0.0	4	-	+	+	-	+
1 * B	-1.87	70.23	30.25	-115.0	68.0	0.0	4	+	+	+	+	+
1 * B	-1.87	70.77	29.71	-115.0	68.0	0.0	4	-	+	+	+	+
1 * B	-0.93	70.23	30.25	-60.0	68.0	0.0	4	+	+	+	+	+
1 * B	-0.93	70.77	29.71	-60.0	68.0	0.0	4	-	+	+	+	+
1 * B	0.02	70.23	30.25	-40.0	68.0	0.0	4	+	+	-	+	+
1 * B	0.02	70.77	29.71	-40.0	68.0	0.0	4	-	+	-	+	+
1 * A	0.98	70.23	30.25	-10.0	64.0	0.0	4	+	+	-	+	+
1 * A	0.98	70.77	29.71	-10.0	64.0	0.0	4	-	+	-	+	+
1 * B	126.40	-57.32	30.25	155.0	69.0	0.0	5	+	+	-	+	+
1 * B	126.78	-57.70	29.71	155.0	69.0	0.0	5	-	+	-	+	+
1 * B	127.08	-56.65	30.25	155.0	69.0	0.0	5	+	+	-	+	+
1 * B	127.75	-55.98	30.25	115.0	69.0	0.0	5	+	+	-	+	+
1 * B	128.12	-56.35	29.71	115.0	69.0	0.0	5	-	+	-	+	+
1 * B	128.42	-55.30	30.25	105.0	69.0	0.0	5	+	+	-	+	+
1 * B	128.80	-55.68	29.71	105.0	69.0	0.0	5	-	+	-	+	+
1 * A	115.23	69.98	30.25	-170.0	64.0	0.0	6	+	+	-	+	+
1 * A	115.50	70.44	29.71	-170.0	64.0	0.0	6	-	+	-	+	+
1 * B	116.06	69.51	30.25	-140.0	69.0	0.0	6	-	+	-	+	+
1 * B	116.88	69.03	30.25	-140.0	69.0	0.0	6	+	+	-	+	+
1 * B	117.70	68.56	30.25	-100.0	63.0	0.0	6	+	+	-	+	+
1 * B	117.97	69.02	29.71	-100.0	63.0	0.0	6	-	+	-	+	+