

# Tervetes novads

## Kronauce ielas

Project code: LED gaismekli M5

Date: 08-06-2013

Description: Kronauce ielas

ielas apgaismojuma noslogotibas kategorija (Me5)

ielas platums max. 6.2m

Attalums starp balstiem max. 42m

Apgaismes Balsts 6m

Balsta konsole H-2m L-1m 10 gradi

Balsta attalums no Celja braucamas daljas max. -2.0m

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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CalcuLuX Road 7.7.0.1

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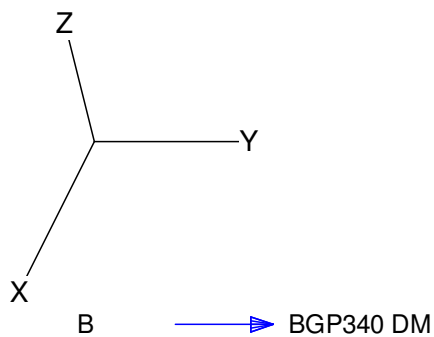
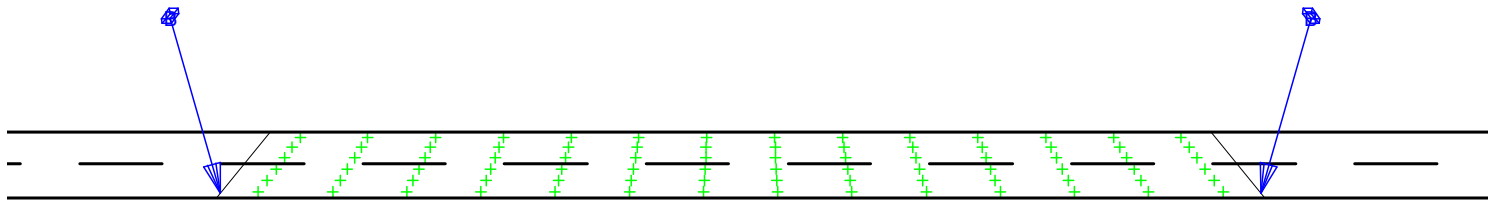
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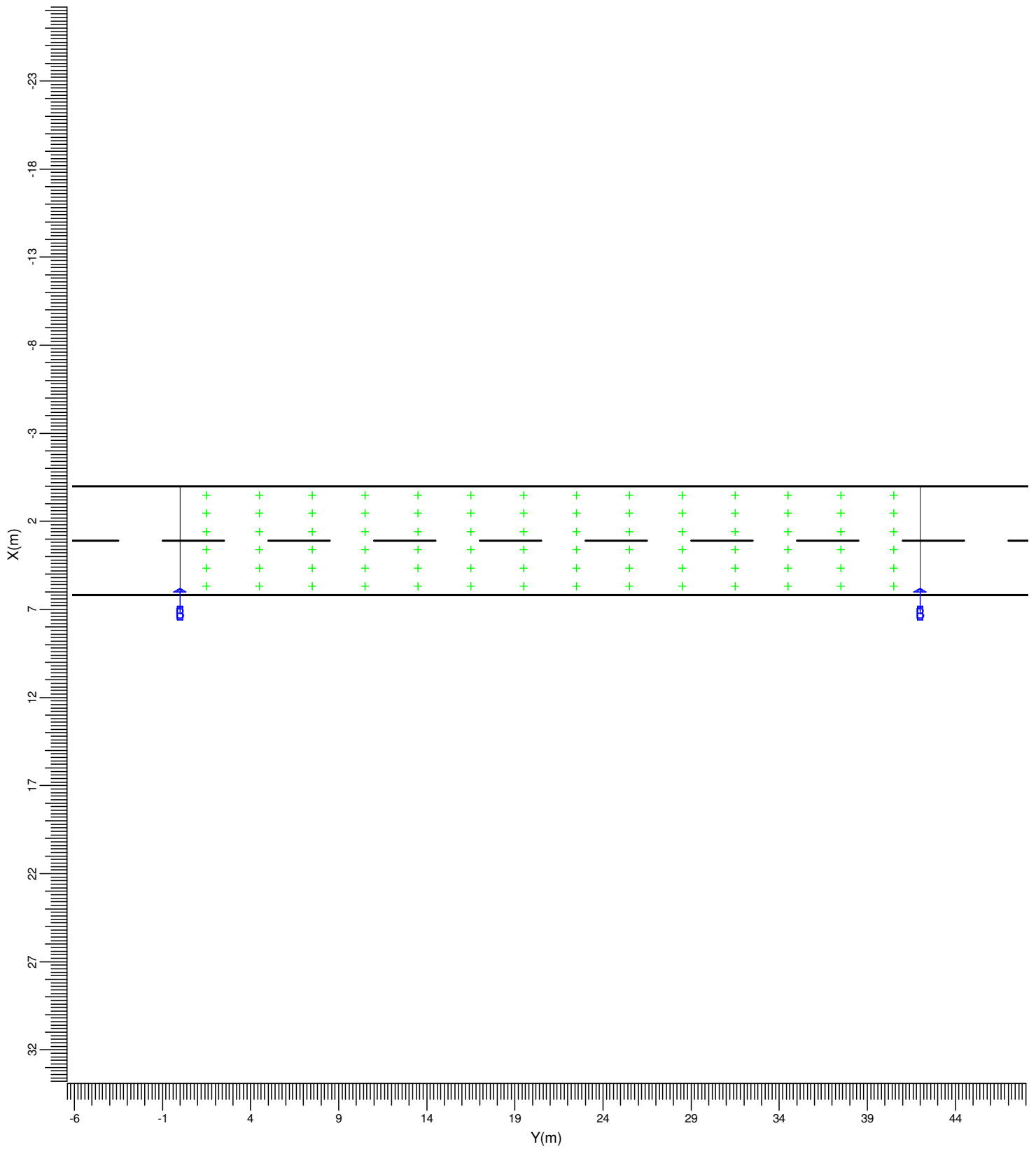
# 1. Project Description

## 1.1 3-D Project Overview

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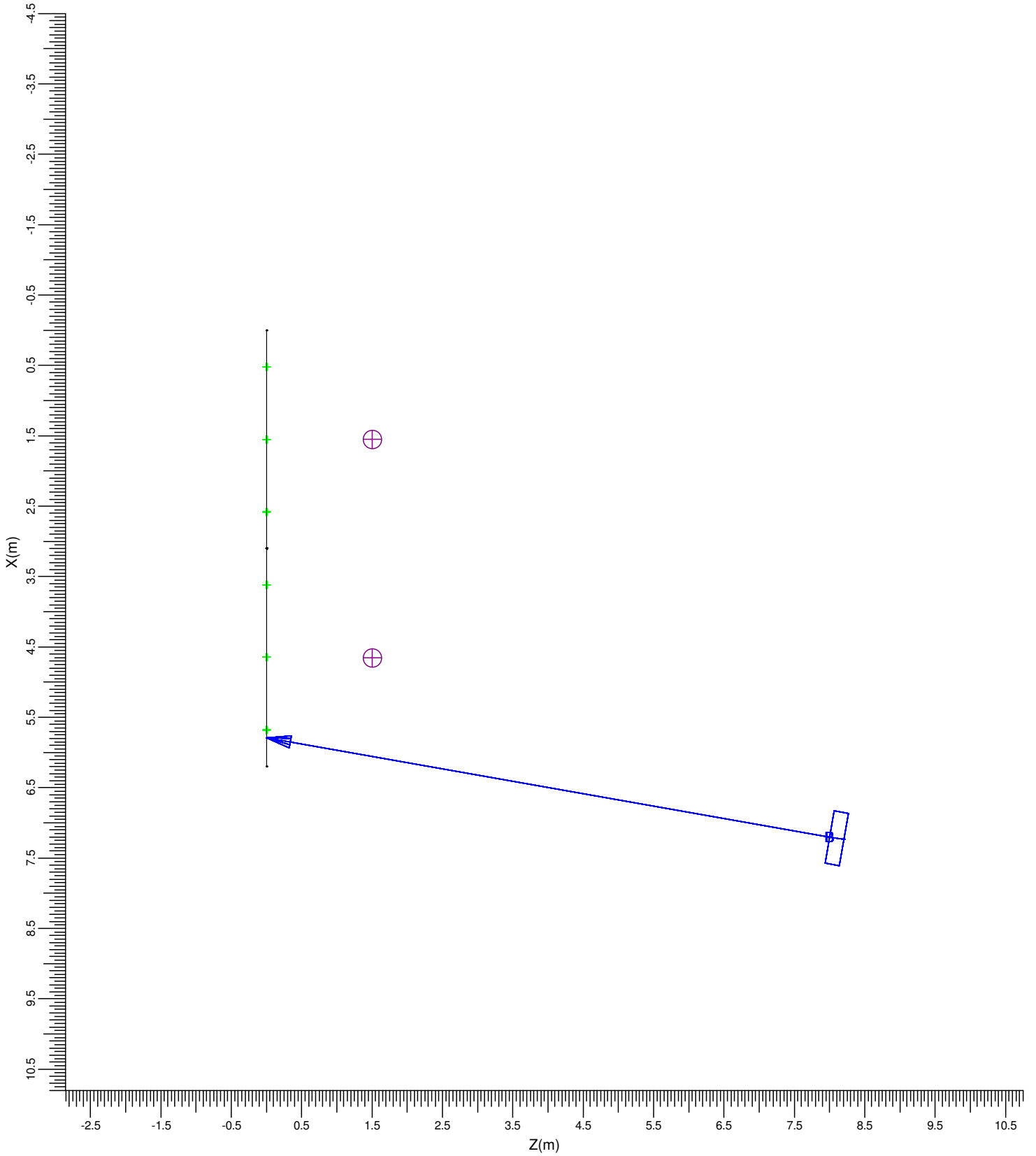
## 1.2 Top Project Overview



B       BGP340 DM

Scale  
1:300

### 1.3 Front Project Overview



B → BGP340 DM

Scale  
1:75

## 2. Overview of Schemes

The overall maintenance factor used for this project is 0.80.

Main Field grid is based on the CEN Luminance grid method.

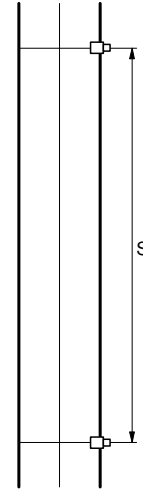
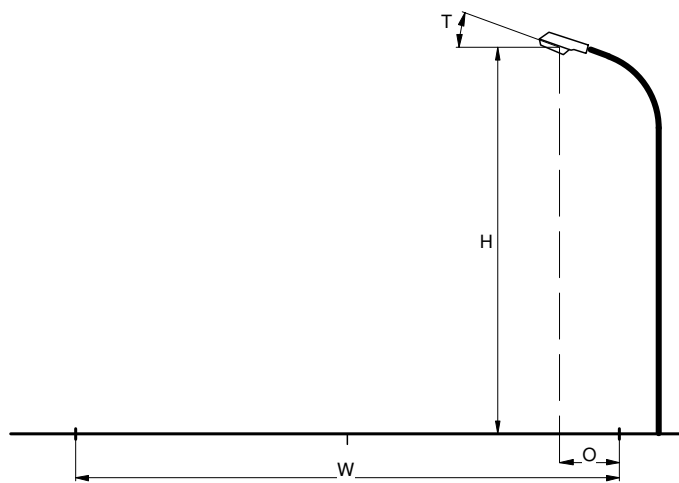
Code	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
B	BGP340 DM	1 * LED74S/640	71.2	1 * 7360

	Unit	Scheme 1
Carriageway		Single Carriageway
Road Width	m	6.20
Number of Lanes		2
Reflection Table		CIE C2
Q0 of Table		0.070
Maintenance Factor		0.80
Luminaire Code		B
Installation		Single Sided Right
Height	m	8.00
Spacing	m	42.00
Overhang	m	-1.00
Tilt90	deg	10.0
L ave	cd/m2	0.58
L min/ave		0.52
UI		0.45
TI	%	13.9
Eh ave	lux	9.24
SR		0.73

### 3. Summary

#### 3.1 Main Road

Luminaire Type	:	BGP340 DM
Lamp Type	:	1 * LED74S/640
Lamp Flux	:	7360 lumen
Tilt90	(T)	: 10.0 deg
Grid Method	:	CEN Luminance
Project Maintenance Factor	:	0.80



Carriageway	:	Single Carriageway
Road Width	(W)	: 6.20 m
Number of Lanes	:	2
Reflection Table	:	CIE C2
Q0 of Table	:	0.070
Maintenance Factor	:	0.80
Installation	:	Single Sided Right
Height	(H)	: 8.00 m
Spacing	(S)	: 42.00 m
Overhang	(O)	: -1.00 m

Overall quality figures for the above road scheme.

#### Luminance

Average	=	0.58 cd/m <sup>2</sup>
Minimum/Average	=	0.52
UI	=	0.45

#### Horizontal Illuminance

Average	=	9.24 lux
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#### Glare

TI	=	13.9 %
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#### Surround Ratio

SR	=	0.73
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## 4. Calculation Results

### 4.1 Main L (O1): Textual Table

Grid : Main at Z = -0.00 m TI ( 1.55,-17.88, 1.50) = 10.0%  
 Calculation : Luminance towards CEN Observer (O1) (1.55, -60.00, 1.50) (cd/m2)  
 Road Surface : CIE C2 with Q0 = 0.070

Y (m)	1.50	4.50	7.50	10.50	13.50	16.50	19.50	22.50	25.50	28.50	31.50	34.50	37.50
X (m)	0.52	0.47	0.41	0.38	0.34	0.32<	0.33	0.33	0.35	0.40	0.44	0.48	0.52
	1.55	0.53	0.47	0.43	0.36	0.35	0.39	0.40	0.42	0.46	0.51	0.55	0.62
	2.58	0.58	0.50	0.44	0.40	0.40	0.45	0.50	0.53	0.53	0.59	0.65	0.67
	3.62	0.67	0.56	0.47	0.44	0.47	0.58	0.66	0.69	0.71	0.74	0.82	0.78
	4.65	0.76	0.62	0.52	0.50	0.55	0.72	0.83	0.91	0.94	0.95	1.03	0.99
	5.68	0.83	0.66	0.52	0.47	0.55	0.75	0.94	1.07	1.12	1.12	1.15	1.16>

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Average 0.63      Minimum 0.32      Min/Ave 0.52      Min/Max 0.28      Project maintenance factor 0.80



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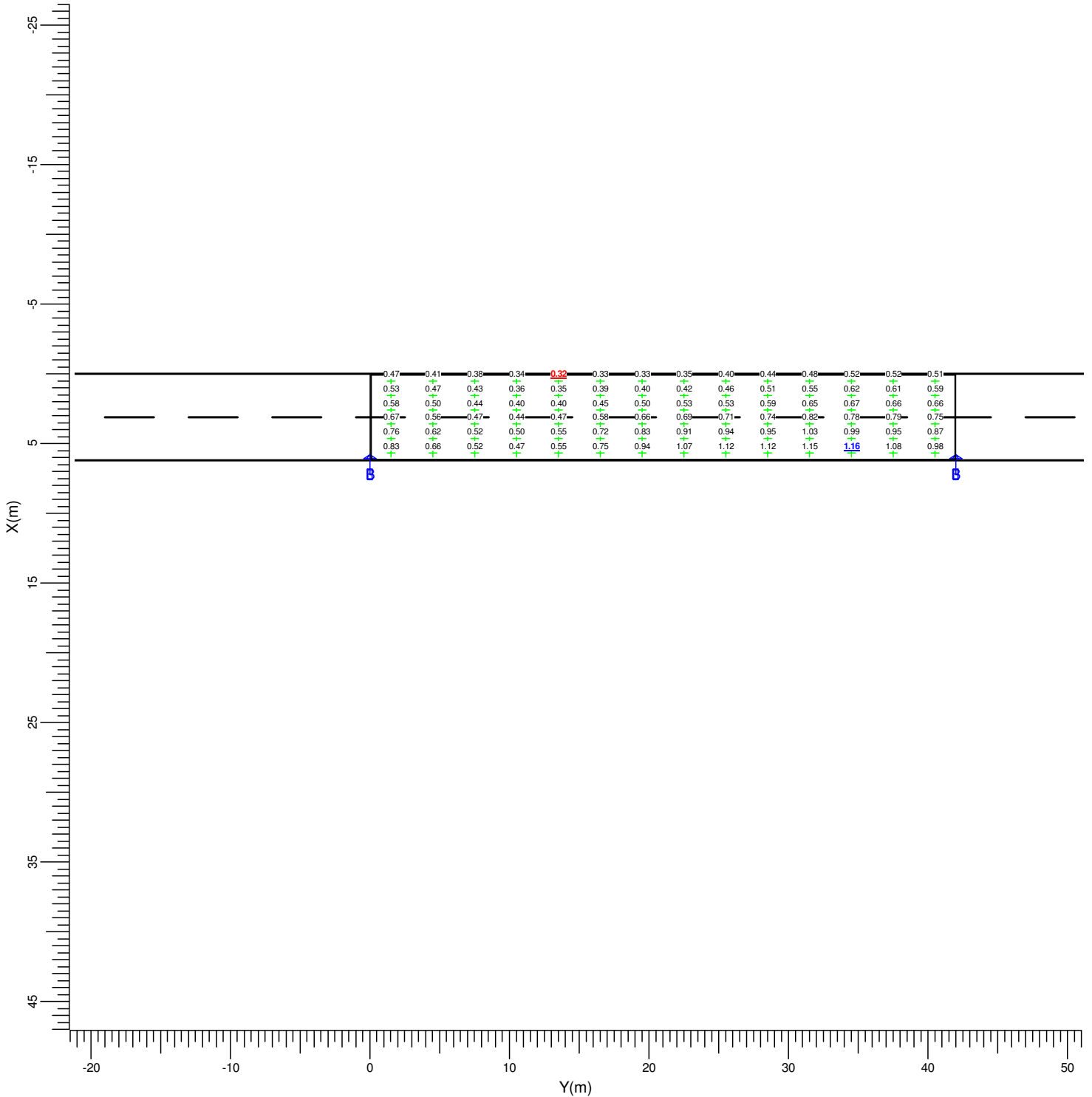
Grid : Main at Z = -0.00 m TI ( 1.55,-17.88, 1.50) = 10.0%  
Calculation : Luminance towards CEN Observer (O1) (1.55, -60.00,  
1.50) (cd/m2)  
Road Surface : CIE C2 with Q0 = 0.070

Y (m)	40.50
X (m)	
0.52	0.51
1.55	0.59
2.58	0.66
3.62	0.75
4.65	0.87
5.68	0.98

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor
0.63	0.32	0.52	0.28	0.80

### 4.2 Main L (O1): Graphical Table

Grid : Main at Z = -0.00 m TI ( 1.55,-17.88, 1.50) = 10.0%  
 Calculation : Luminance towards CEN Observer (O1) (1.55, -60.00, 1.50) (cd/m<sup>2</sup>)  
 Road Surface : CIE C2 with Q0 = 0.070

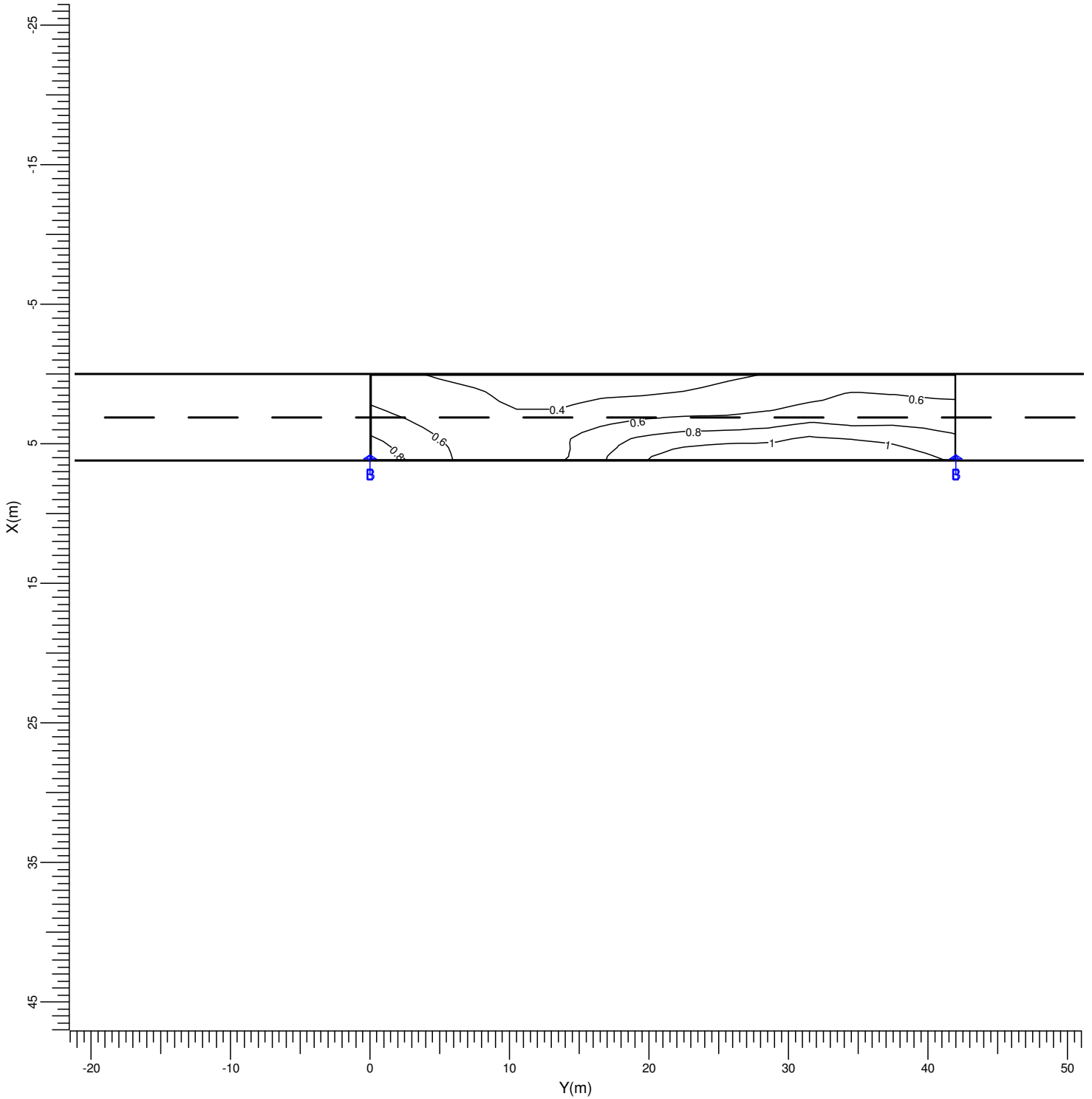


B → BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
0.63	0.32	0.52	0.28	0.80	1:400

### 4.3 Main L (O1): Iso Contour

Grid : Main at Z = -0.00 m TI ( 1.55,-17.88, 1.50) = 10.0%  
 Calculation : Luminance towards CEN Observer (O1) (1.55, -60.00,  
 1.50) (cd/m<sup>2</sup>)  
 Road Surface : CIE C2 with Q0 = 0.070

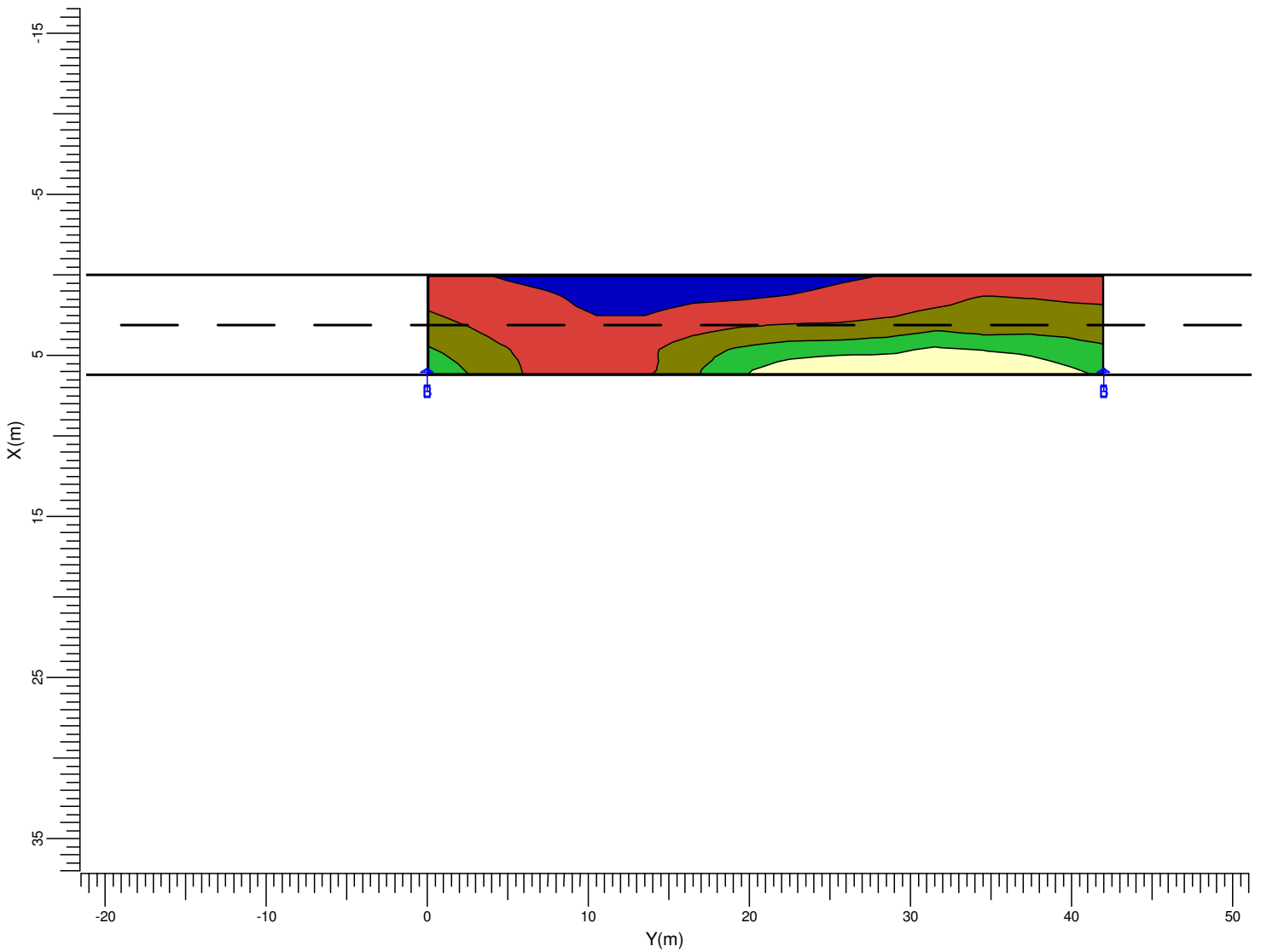


B → BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
0.63	0.32	0.52	0.28	0.80	1:400

### 4.4 Main L (O1): Filled Iso Contour

Grid : Main at Z = -0.00 m TI ( 1.55,-17.88, 1.50) = 10.0%  
 Calculation : Luminance towards CEN Observer (O1) (1.55, -60.00, 1.50) (cd/m<sup>2</sup>)  
 Road Surface : CIE C2 with Q0 = 0.070



B → BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
0.63	0.32	0.52	0.28	0.80	1:400

4.5 Main L (O2): Textual Table

Grid : Main at Z = -0.00 m  
 Calculation : Luminance towards CEN Observer (O2) (4.65, -60.00, 1.50) (cd/m2)  
 Road Surface : CIE C2 with Q0 = 0.070  
 TI ( 4.65,-17.88, 1.50) = 13.9%

Y (m)	1.50	4.50	7.50	10.50	13.50	16.50	19.50	22.50	25.50	28.50	31.50	34.50	37.50
X (m)													
0.52	0.46	0.41	0.37	0.32	0.31	0.31	0.30<	0.33	0.37	0.41	0.46	0.50	0.51
1.55	0.52	0.46	0.42	0.34	0.33	0.34	0.35	0.38	0.42	0.47	0.52	0.60	0.59
2.58	0.58	0.49	0.42	0.36	0.34	0.38	0.42	0.44	0.48	0.53	0.60	0.65	0.65
3.62	0.65	0.53	0.44	0.40	0.39	0.46	0.51	0.57	0.61	0.66	0.76	0.74	0.76
4.65	0.74	0.60	0.48	0.43	0.44	0.57	0.68	0.76	0.80	0.85	0.95	0.94	0.93
5.68	0.84	0.66	0.52	0.45	0.49	0.68	0.84	0.95	1.01	1.05	1.10	1.13>	1.07

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Average 0.58      Minimum 0.30      Min/Ave 0.52      Min/Max 0.27      Project maintenance factor 0.80

< Continue

Grid : Main at Z = -0.00 m TI ( 4.65,-17.88, 1.50) = 13.9%  
Calculation : Luminance towards CEN Observer (O2) (4.65, -60.00,  
1.50) (cd/m2)  
Road Surface : CIE C2 with Q0 = 0.070

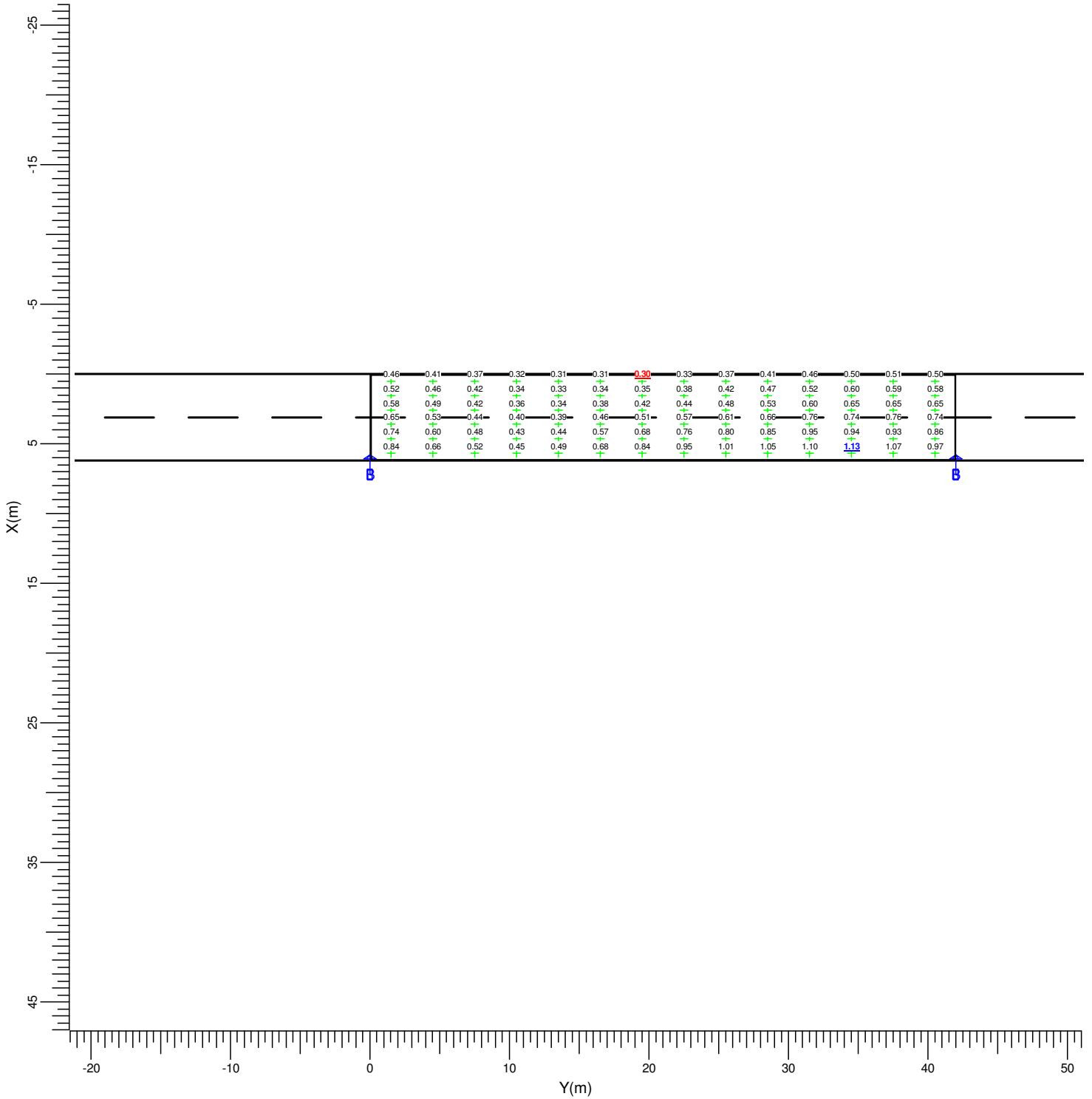
Y (m)	40.50
X (m)	
0.52	0.50
1.55	0.58
2.58	0.65
3.62	0.74
4.65	0.86
5.68	0.97

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor
0.58	0.30	0.52	0.27	0.80

### 4.6 Main L (O2): Graphical Table

Grid : Main at Z = -0.00 m  
 Calculation : Luminance towards CEN Observer (O2) (4.65, -60.00, 1.50) (cd/m<sup>2</sup>)  
 Road Surface : CIE C2 with Q0 = 0.070

TI ( 4.65,-17.88, 1.50) = 13.9%

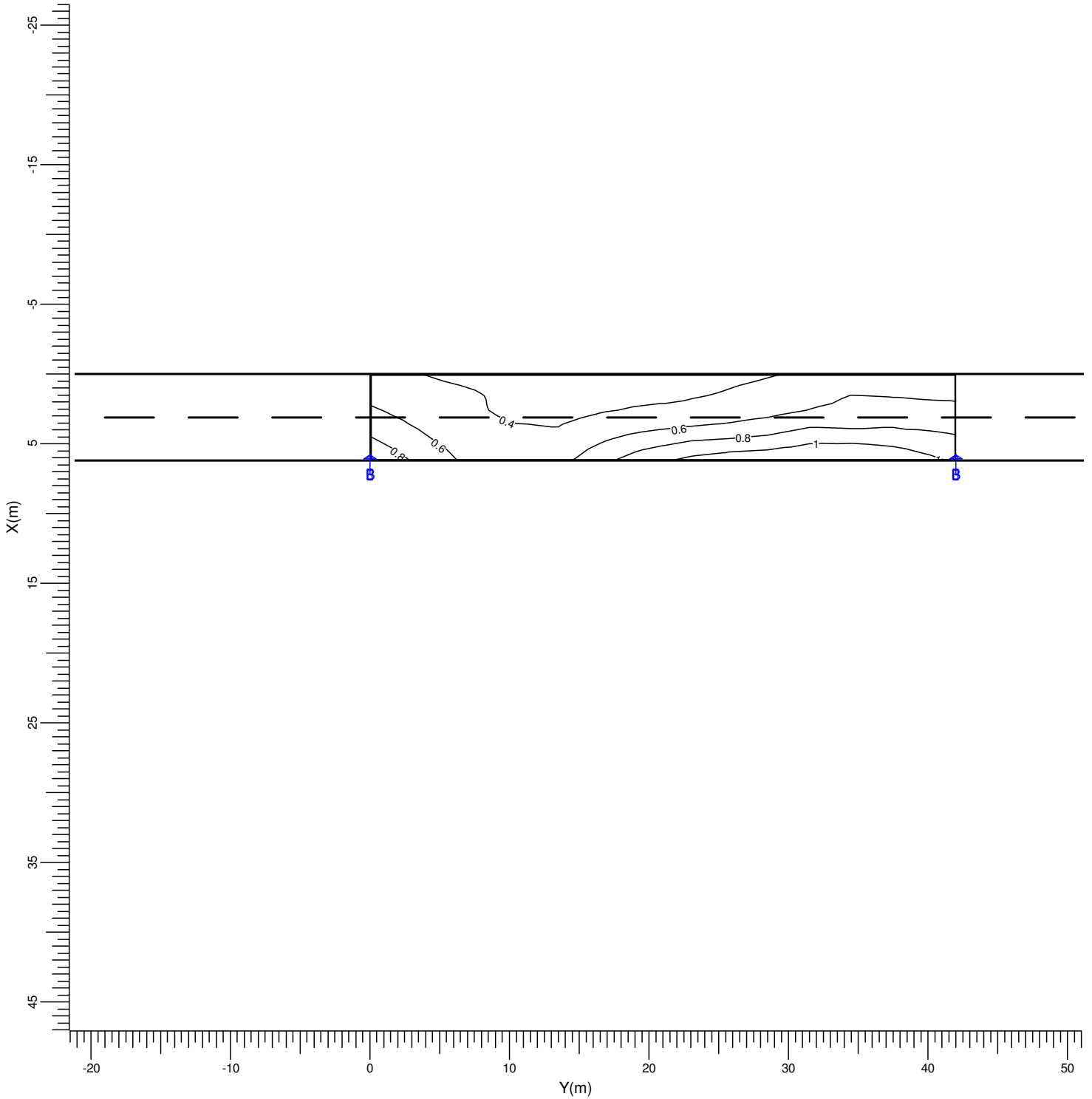


B BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
0.58	0.30	0.52	0.27	0.80	1:400

### 4.7 Main L (O2): Iso Contour

Grid : Main at Z = -0.00 m TI ( 4.65,-17.88, 1.50) = 13.9%  
 Calculation : Luminance towards CEN Observer (O2) (4.65, -60.00, 1.50) (cd/m2)  
 Road Surface : CIE C2 with Q0 = 0.070



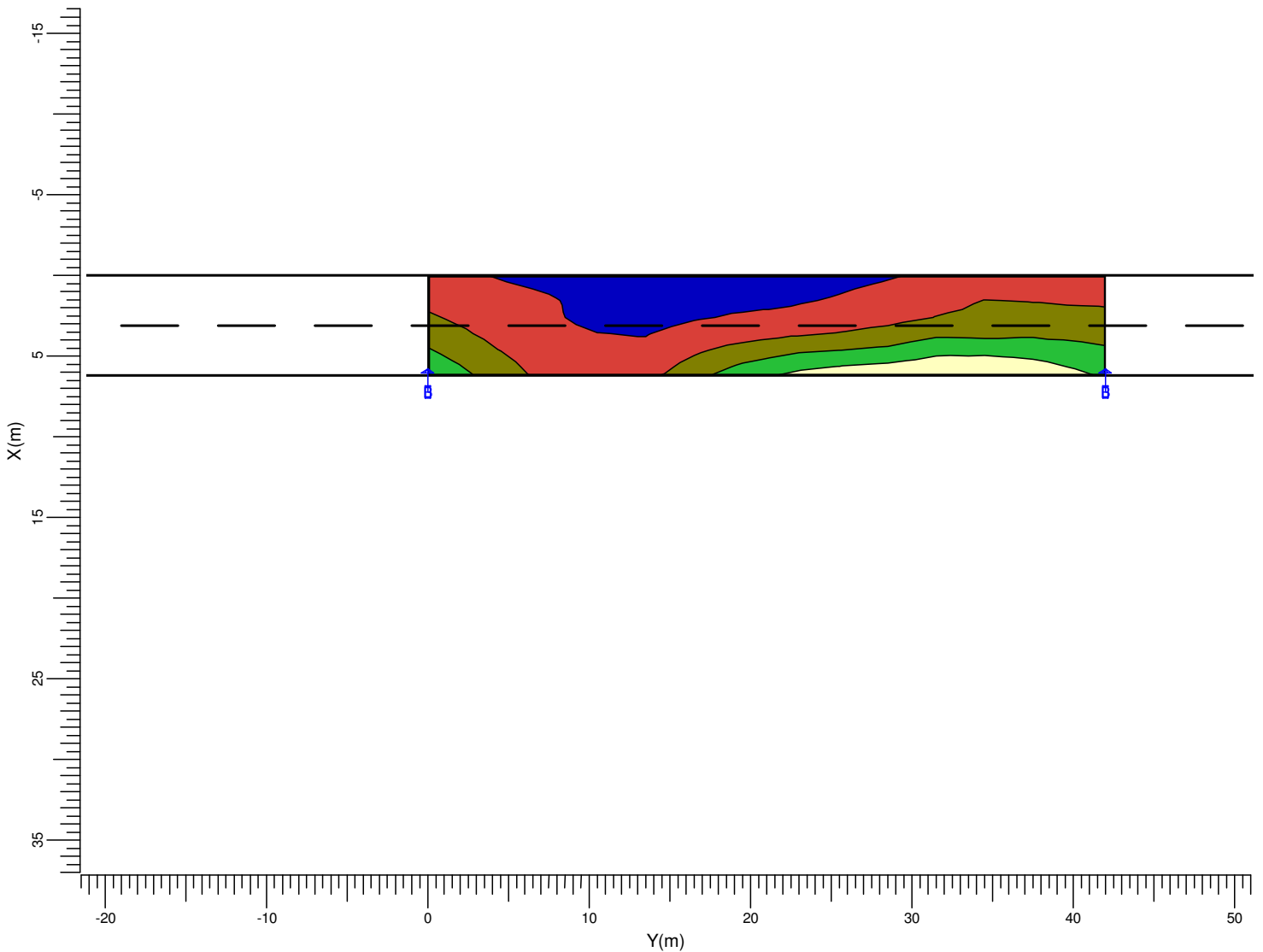
B → BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
0.58	0.30	0.52	0.27	0.80	1:400



### 4.8 Main L (O2): Filled Iso Contour

Grid : Main at Z = -0.00 m TI ( 4.65,-17.88, 1.50) = 13.9%  
 Calculation : Luminance towards CEN Observer (O2) (4.65, -60.00, 1.50) (cd/m2)  
 Road Surface : CIE C2 with Q0 = 0.070



B → BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
0.58	0.30	0.52	0.27	0.80	1:400

#### 4.9 Main Eh: Textual Table

Grid		: Main at Z = -0.00 m												
Calculation		: Horizontal Illuminance (lux)												
Y (m)	X (m)	1.50	4.50	7.50	10.50	13.50	16.50	19.50	22.50	25.50	28.50	31.50	34.50	37.50
0.52		13.0	11.3	9.4	7.1	5.4	4.5	4.0	4.0	4.5	5.4	7.1	9.4	11.3
1.55		15.0	12.6	10.4	7.3	5.4	4.5	4.0	4.0	4.5	5.4	7.3	10.4	12.6
2.58		16.8	13.6	10.3	7.4	5.3	4.3	3.9	3.9	4.3	5.3	7.4	10.3	13.6
3.62		19.4	15.1	10.7	7.7	5.2	4.2	3.8	3.8	4.2	5.2	7.7	10.7	15.1
4.65		22.3	17.1	11.6	7.8	5.1	4.0	3.5	3.5	4.0	5.1	7.8	11.6	17.1
5.68		24.9	18.9	12.1	7.4	4.8	3.7	3.3	3.3	3.7	4.8	7.4	12.1	18.9

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Average  
9.24

Minimum  
3.27

Min/Ave  
0.35

Min/Max  
0.13

Project maintenance factor  
0.80

< Continue

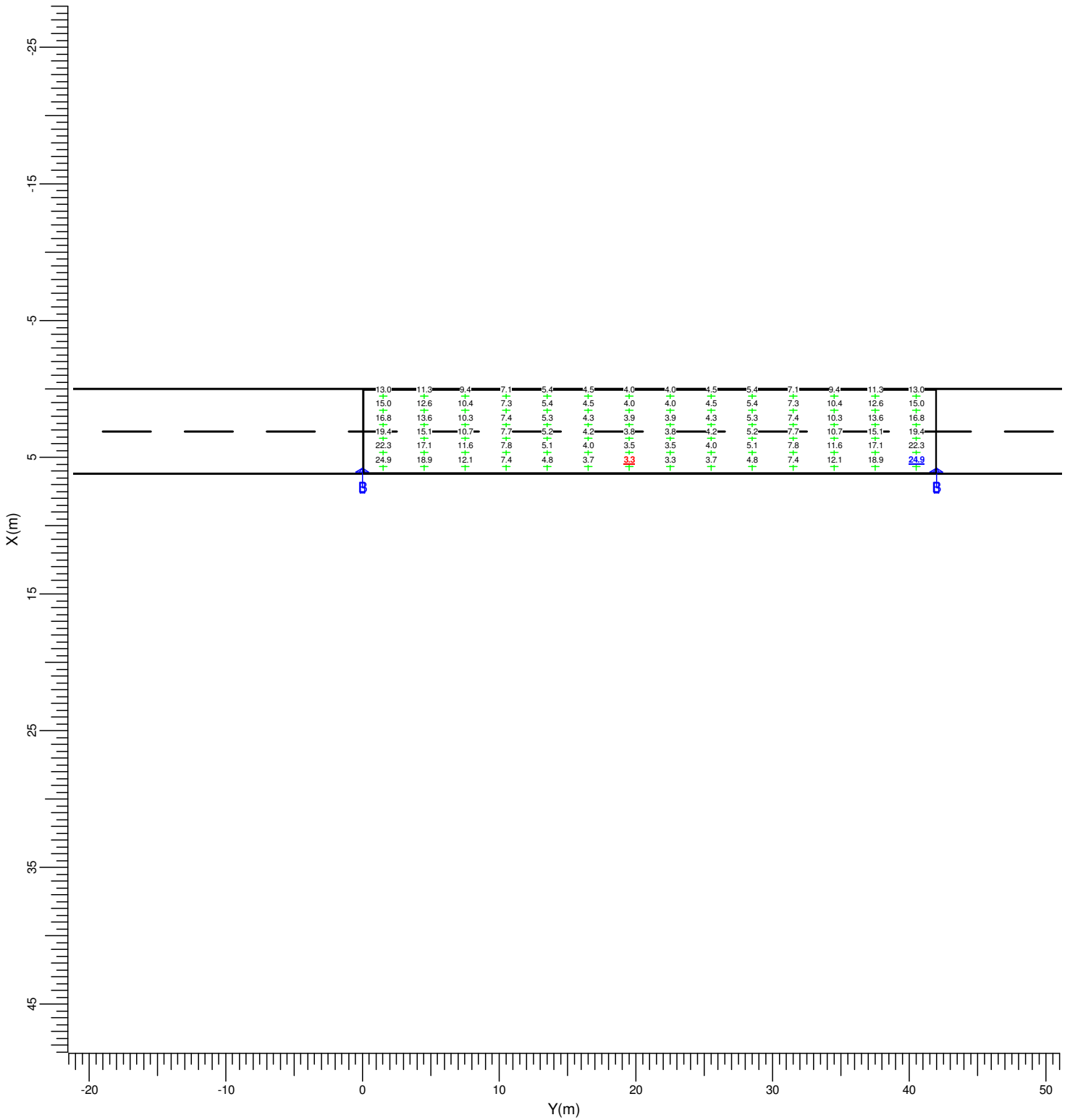
Grid : Main at Z = -0.00 m  
Calculation : Horizontal Illuminance (lux)

Y (m)	40.50
X (m)	
0.52	13.0
1.55	15.0
2.58	16.8
3.62	19.4
4.65	22.3
5.68	24.9>

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor
9.24	3.27	0.35	0.13	0.80

### 4.10 Main Eh: Graphical Table

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

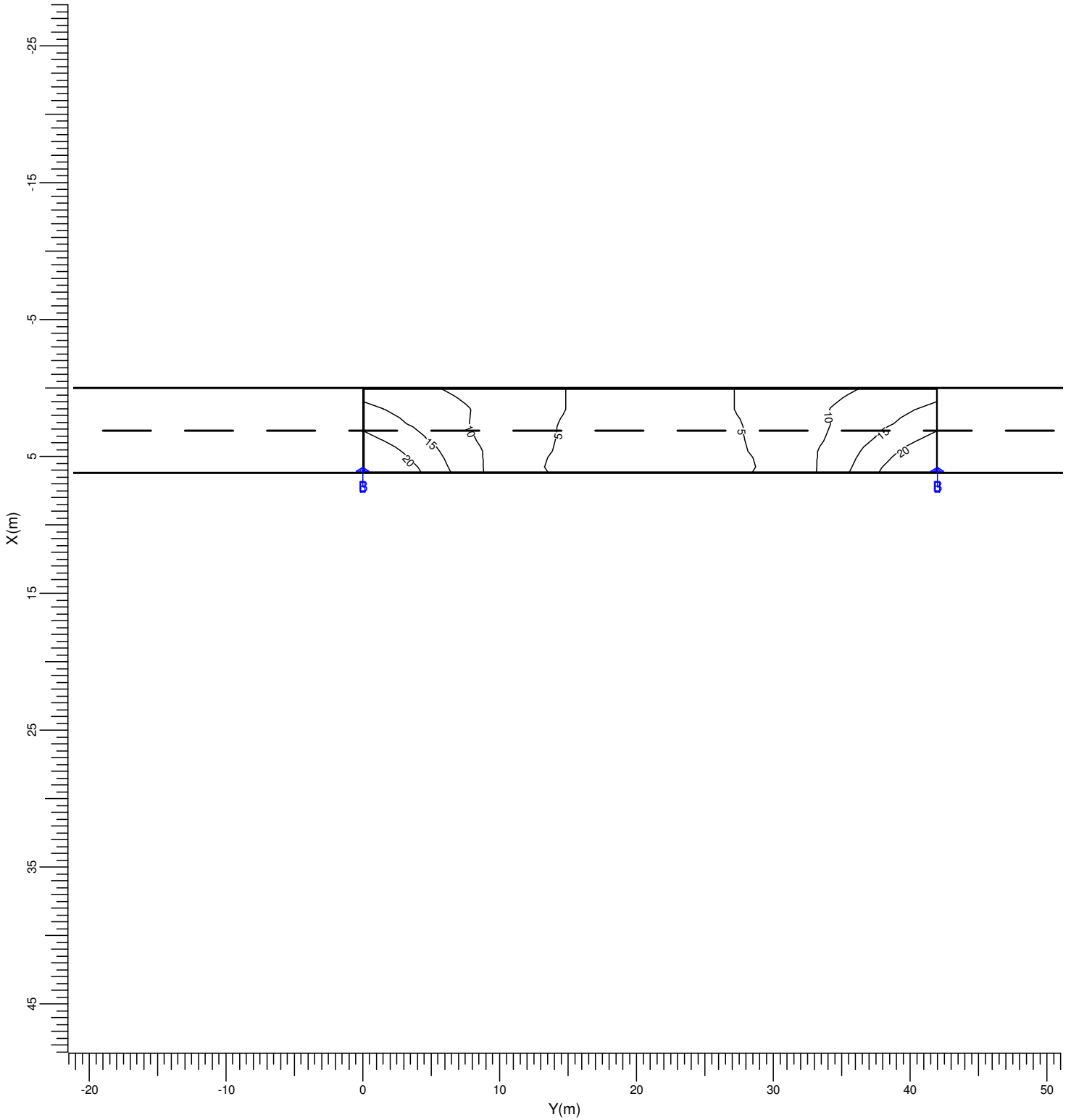


B BGP340 DM

Average 9.24	Minimum 3.27	Min/Ave 0.35	Min/Max 0.13	Project maintenance factor 0.80	Scale 1:400
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### 4.11 Main Eh: Iso Contour

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

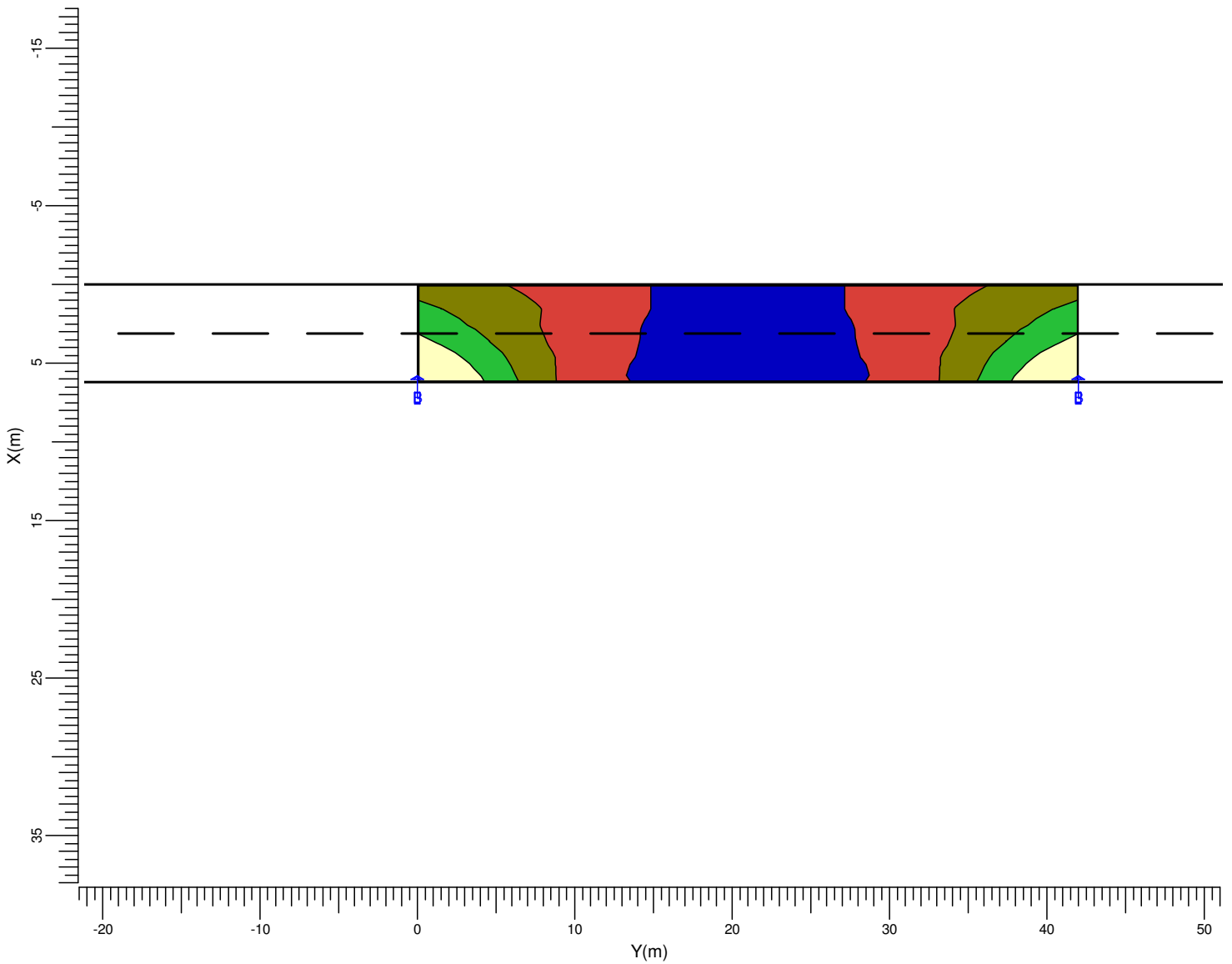


B BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
9.24	3.27	0.35	0.13	0.80	1:400

### 4.12 Main Eh: Filled Iso Contour

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



B BGP340 DM

Average	Minimum	Min/Ave	Min/Max	Project maintenance factor	Scale
9.24	3.27	0.35	0.13	0.80	1:400