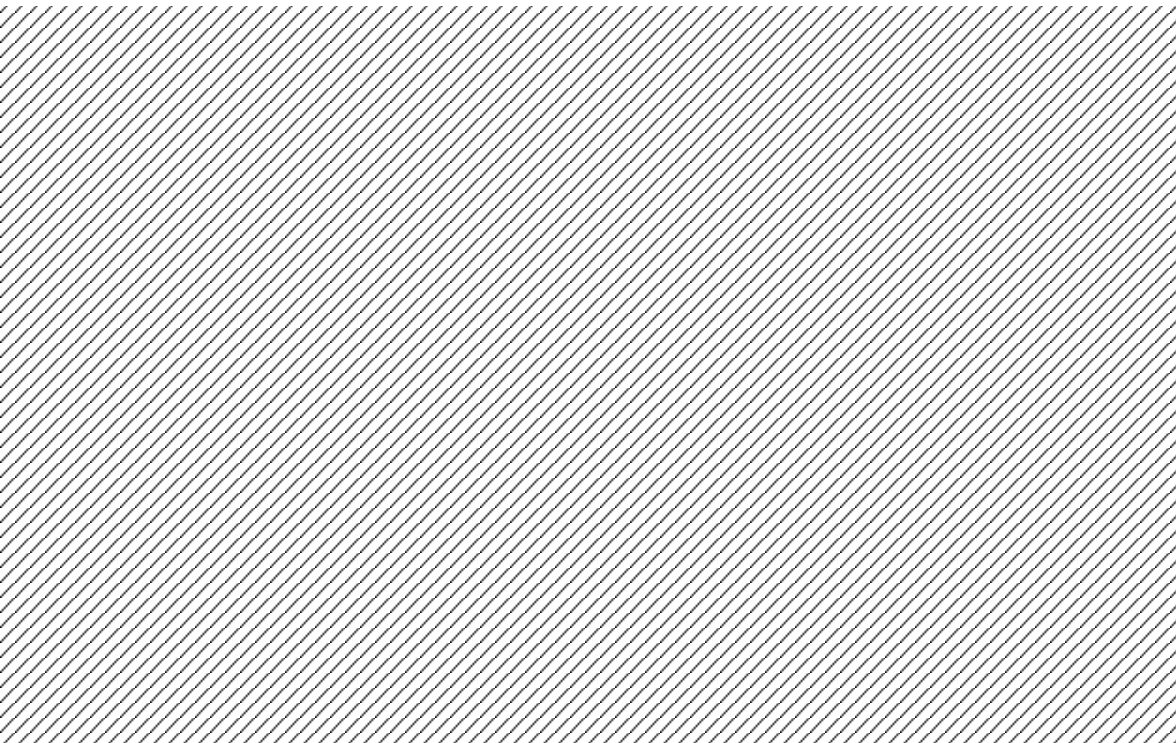




**Lighting of Tbilisi-Sagarejo-Bakurtsikhe road - Single lane
interchange ramps Q1 - with Izylum luminaires**

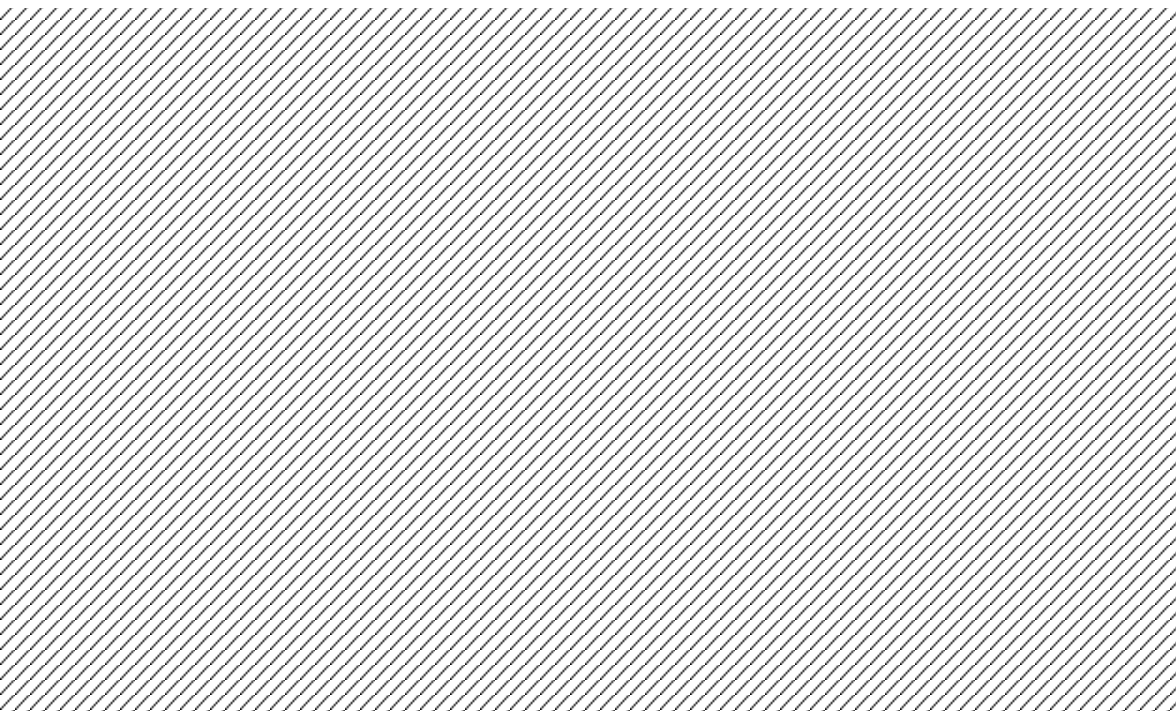
Content

Cover page 1
Content 2
Description 3

Product data sheets

Schröder - IZYLUM 2 5300 Flat glass - 40 LH351C@800mA NW 740 230V 00-53-4
404 449112 (1x 40 LH351C@800mA NW 740 230V 00-53-404)

Summary (according to EN 13201:2015)6
Roadway (M3)9



Description

Lighting calculations of road lighting of Tbilisi-Sagarejo-Bakurtsikhe road - Single lane interchange ramps Q1 - with Izylum luminaires

Petro BUKANOV

TOV Schreder, UKRAINE
Mykulynetska str. 46B | 46005
Ternopil - UKRAINE

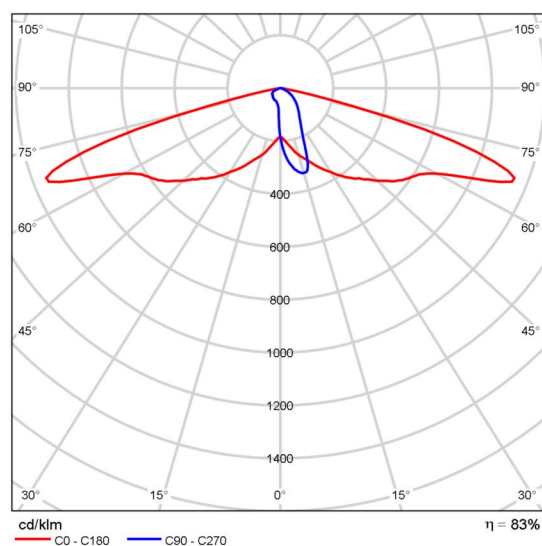
T +380 352 521611, 250613
F +380 352 250613
pbukanov@schreder.com

Product data sheet

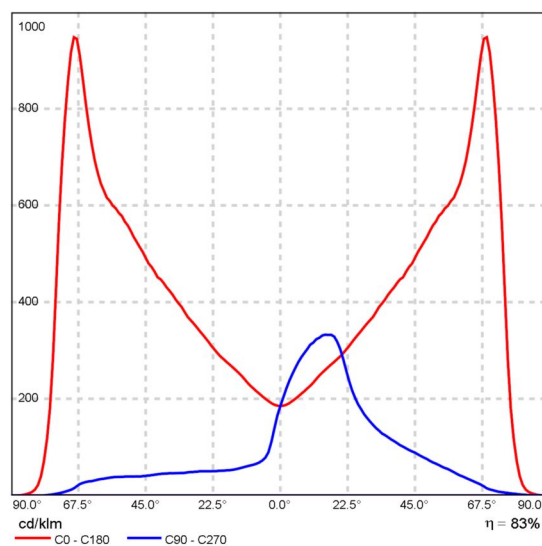
SCHREDER IZYLUM 2 5300 Flat glass - 40 LH351C@800mA NW 740 230V 00-53-404 449112



Article No.	449112
P	101.0 W
Φ_{Lamp}	14949 lm
$\Phi_{\text{Luminaire}}$	12410 lm
η	83.02 %
Luminous efficacy	122.9 lm/W
CCT	4000 K
CRI	70



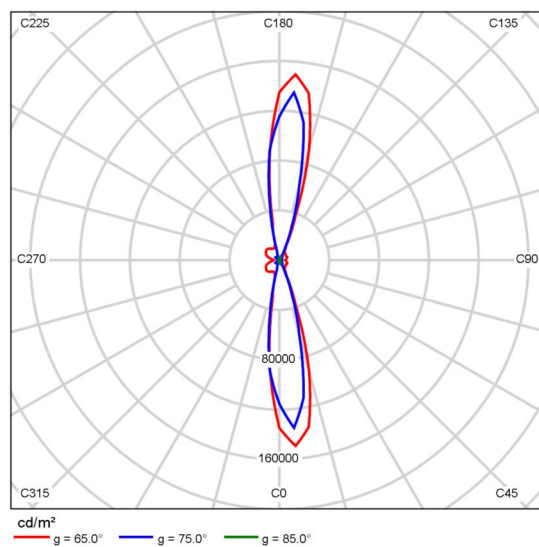
Polar LDC



Linear LDC

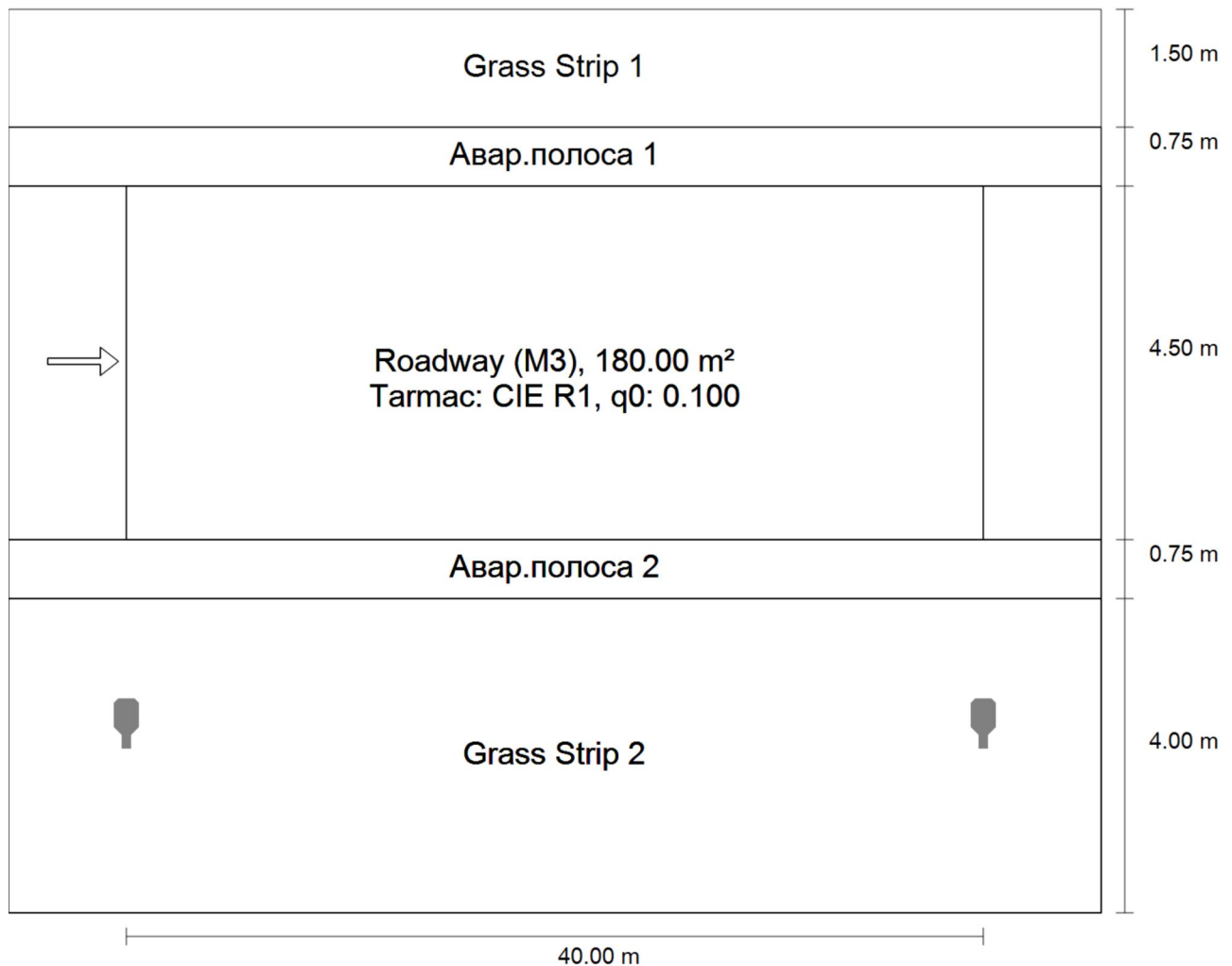
Product data sheet

SCHREDER IZYLUM 2 5300 Flat glass - 40 LH351C@800mA NW 740 230V 00-53-404 449112



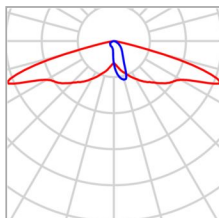
Luminance diagram

Tbilisi-Sagarejo-Bakurtsikhe road - Single lane interchange ramps Q1 · Альтернатива 1
Summary (according to EN 13201:2015)



Tbilisi-Sagarejo-Bakurtsikhe road - Single lane interchange ramps Q1 · Альтернатива 1

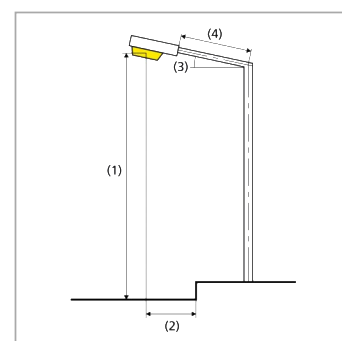
Summary (according to EN 13201:2015)



Manufacturer	SCHREDER	P	101.0 W
Article No.	449112	Φ_{Lamp}	14949 lm
Article name	IZYLUM 2 5300 Flat glass - 40 LH351C@800mA NW 740 230V 00-53-404 449112	$\Phi_{\text{Luminaire}}$	12410 lm
Fitting	1x 40 LH351C@800mA NW 740 230V 00-53-404	η	83.02 %

IZYLUM 2 / 5300 / 40 LEDs 800mA NW (single side bottom)

Pole distance	40.000 m
(1) Light spot height	8.000 m
(2) Light point overhang	-2.277 m
(3) Boom inclination	10.0°
(4) Boom length	0.362 m
Annual operating hours	4000 h: 100.0 %, 101.0 W
Consumption	2525.0 W/km
ULR / ULOR	0.00 / 0.00
Max. luminous intensities	≥ 70°: 1238 cd/klm
Any direction forming the specified angle from the downward vertical, with the luminaire installed for use.	≥ 80°: 150 cd/klm ≥ 90°: 3.74 cd/klm
Luminous intensity class	G*2
The luminous intensity values in [cd/klm] for calculation of the luminous intensity class refer to	



Tbilisi-Sagarejo-Bakurtsikhe road - Single lane interchange ramps Q1 · Альтернатива 1

Summary (according to EN 13201:2015)

the luminaire luminous flux according to EN 13201:2015.

Glare index class	D.1
-------------------	-----

Results for valuation fields

	Symbol	Calculated	Target	Check
Roadway (M3)	L_{av}	2.24 cd/m ²	≥ 1.00 cd/m ²	✓
	U_o	0.43	≥ 0.40	✓
	U_l	0.66	≥ 0.60	✓
	TI	13 %	≤ 15 %	✓
	$R_{EI}^{(1)}$	0.23	-	-

(1) Informative, not part of the valuation

A maintenance factor of 0.80 was used for calculating for the installation.

Results for energy efficiency indicators

	Symbol	Calculated	Consumption
Tbilisi-Sagarejo-Bakurtsikhe road - Single lane interchange ramps Q1	D_p	0.026 W/lx*m ²	-
IZYLUM 2 / 5300 / 40 LEDs 800mA NW (single side bottom)	D_e	2.2 kWh/m ² yr	404.0 kWh/yr

Tbilisi-Sagarejo-Bakurtsikhe road - Single lane interchange ramps Q1 · Альтернатива 1

Roadway (M3)

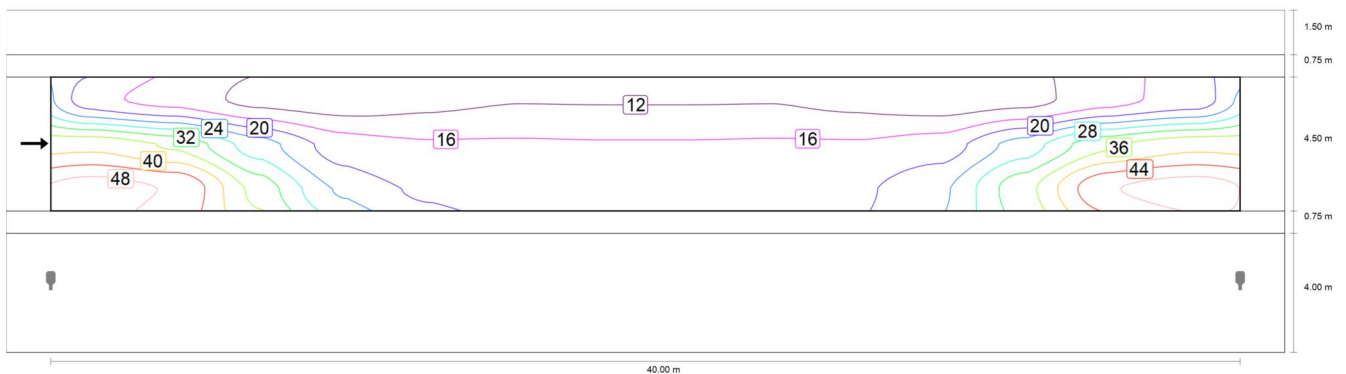
Results for valuation field

	Symbol	Calculated	Target	Check
Roadway (M3)	L_{av}	2.24 cd/m ²	≥ 1.00 cd/m ²	✓
	U_o	0.43	≥ 0.40	✓
	U_l	0.66	≥ 0.60	✓
	TI	13 %	≤ 15 %	✓
	$R_{EI}^{(1)}$	0.23	-	-

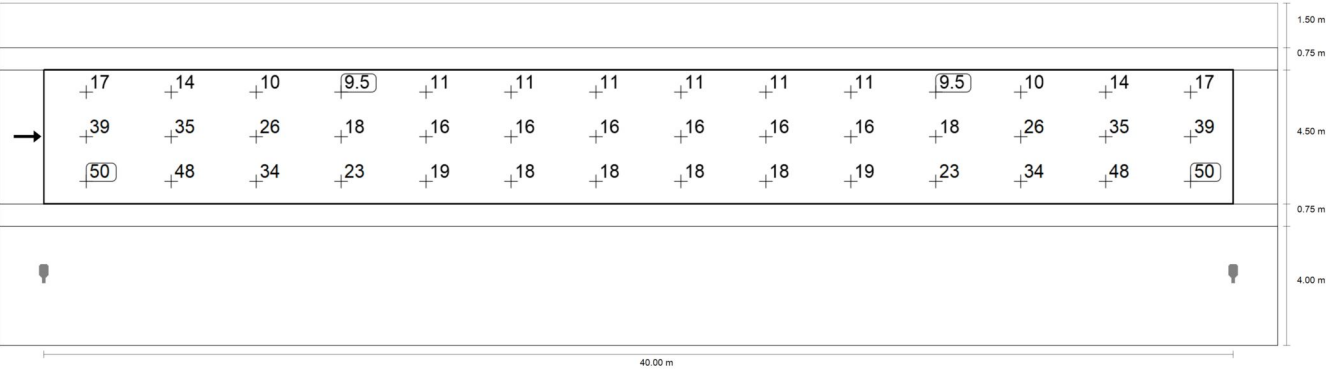
Results for observer

	Symbol	Calculated	Target	Check
Observer 1 Position: -60.000 m, 7.000 m, 1.500 m	L_{av}	2.24 cd/m ²	≥ 1.00 cd/m ²	✓
	U_o	0.43	≥ 0.40	✓
	U_l	0.66	≥ 0.60	✓
	TI	13 %	≤ 15 %	✓

(1) Informative, not part of the valuation



Maintenance value, horizontal illuminance [lx] (Iso-illuminance curves)

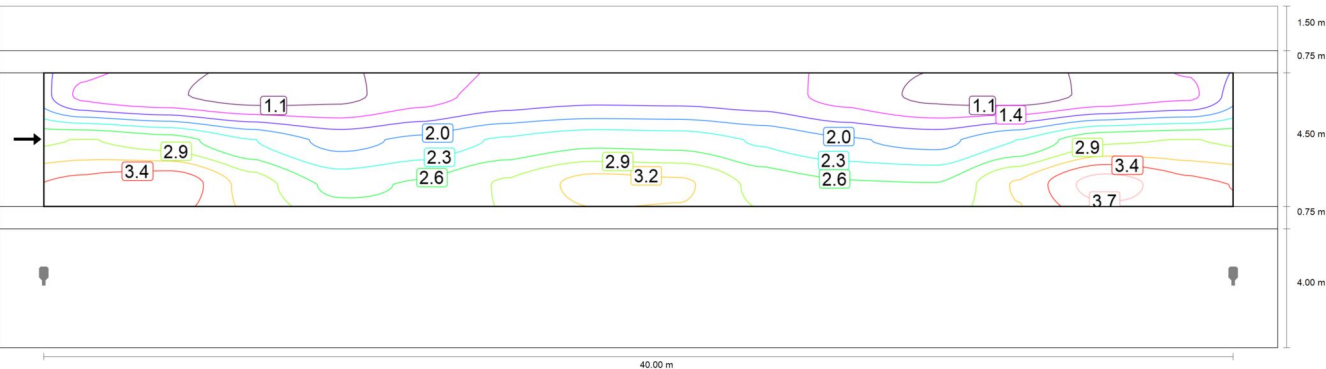


Maintenance value, horizontal illuminance [lx] (Value grid)

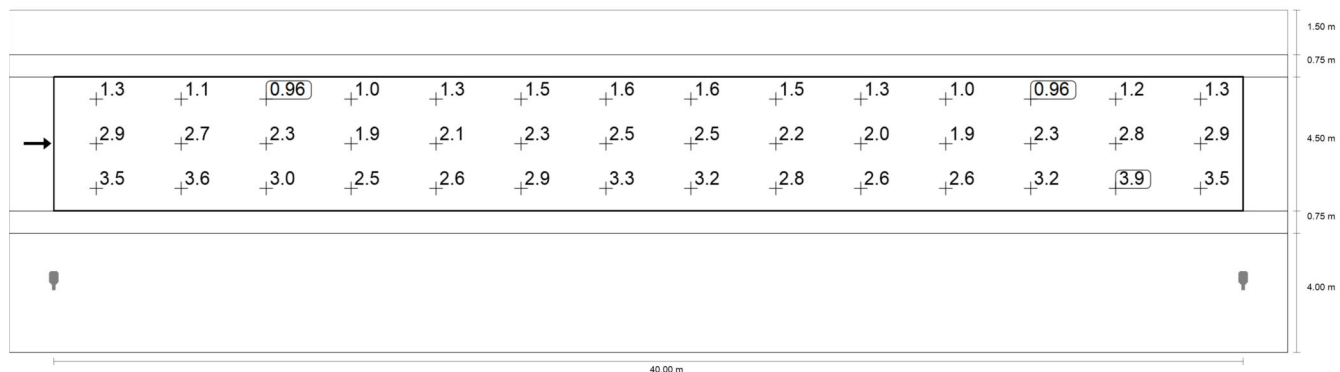
m	1.429	4.286	7.143	10.000	12.857	15.714	18.571	21.429	24.286	27.143	30.000	32.857	35.714	38.571
8.500	17.31	14.11	10.33	9.49	10.56	11.39	11.35	11.35	11.39	10.56	9.49	10.33	14.11	17.31
7.000	38.85	35.18	25.61	17.63	16.01	16.04	15.92	15.92	16.04	16.01	17.63	25.61	35.18	38.85
5.500	50.00	47.62	34.37	22.96	18.86	18.03	18.44	18.44	18.03	18.86	22.96	34.37	47.62	50.00

Maintenance value, horizontal illuminance [lx] (Value chart)

	E _{av}	E _{min}	E _{max}	g ₁	g ₂
Maintenance value, horizontal illuminance	21.9 lx	9.49 lx	50.0 lx	0.433	0.190



Observer 1: Maintenance value, luminance with dry roadway [cd/m²] (Iso-illuminance curves)

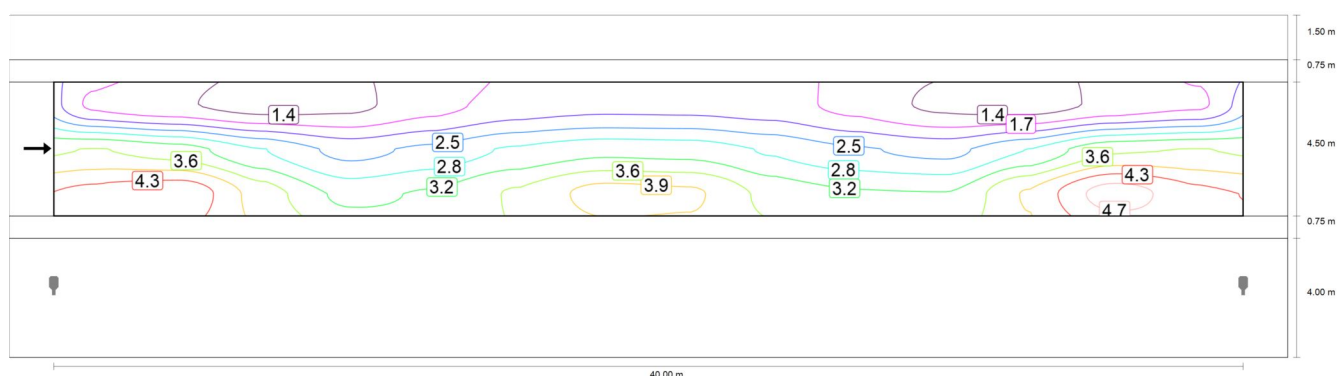


Observer 1: Maintenance value, luminance with dry roadway [cd/m²] (Value grid)

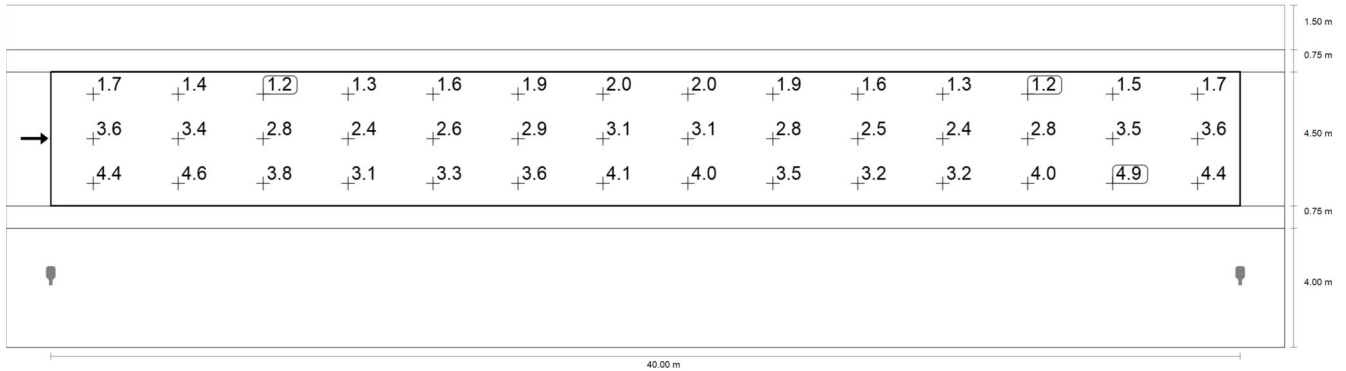
m	1.429	4.286	7.143	10.000	12.857	15.714	18.571	21.429	24.286	27.143	30.000	32.857	35.714	38.571
8.500	1.33	1.15	0.96	1.03	1.29	1.51	1.60	1.59	1.52	1.29	1.04	0.96	1.18	1.34
7.000	2.87	2.71	2.28	1.90	2.06	2.32	2.49	2.46	2.24	2.02	1.90	2.28	2.82	2.86
5.500	3.53	3.65	3.02	2.50	2.60	2.89	3.26	3.20	2.77	2.60	2.58	3.18	3.88	3.53

Observer 1: Maintenance value, luminance with dry roadway [cd/m²] (Value chart)

	L _{av}	L _{min}	L _{max}	g ₁	g ₂
Observer 1: Maintenance value, luminance with dry roadway	2.24 cd/m²	0.96 cd/m²	3.88 cd/m²	0.427	0.247



Observer 1: Luminance with new installation [cd/m²] (Iso-illuminance curves)



Observer 1: Luminance with new installation [cd/m²] (Value grid)

m	1.429	4.286	7.143	10.000	12.857	15.714	18.571	21.429	24.286	27.143	30.000	32.857	35.714	38.571
8.500	1.66	1.43	1.20	1.29	1.61	1.89	2.00	1.99	1.90	1.62	1.30	1.20	1.48	1.68
7.000	3.58	3.39	2.84	2.37	2.57	2.90	3.11	3.07	2.80	2.52	2.38	2.84	3.52	3.58
5.500	4.41	4.56	3.78	3.12	3.25	3.62	4.07	4.00	3.47	3.25	3.23	3.98	4.85	4.41

Observer 1: Luminance with new installation [cd/m²] (Value chart)

	L _{av}	L _{min}	L _{max}	g ₁	g ₂
Observer 1: Luminance with new installation	2.80 cd/m ²	1.20 cd/m ²	4.85 cd/m ²	0.427	0.247