

## Δ/νση Τεχνικών Υπηρεσιών Π. Ε. Γρεβενών

Περιφερειακή οδός Δεσκάτης

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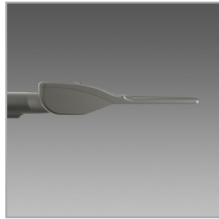
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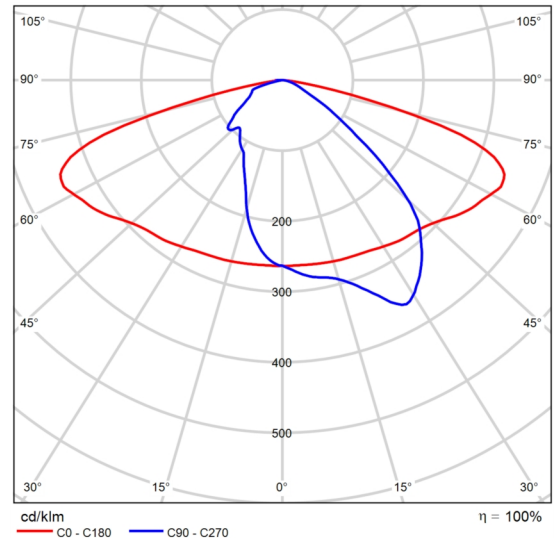
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## Product data sheet

Disano Illuminazione S.p.A - 3481 Mini Giovi - high performance - street ME 4000K CRI 70 102W CLD Graphite



Article No.	331062-00
P	102.0 W
$\Phi_{Lamp}$	15246 lm
$\Phi_{Luminaire}$	15246 lm
$\eta$	100.00 %
Luminous efficacy	149.5 lm/W
CCT	4000 K
CRI	70



Polar LDC

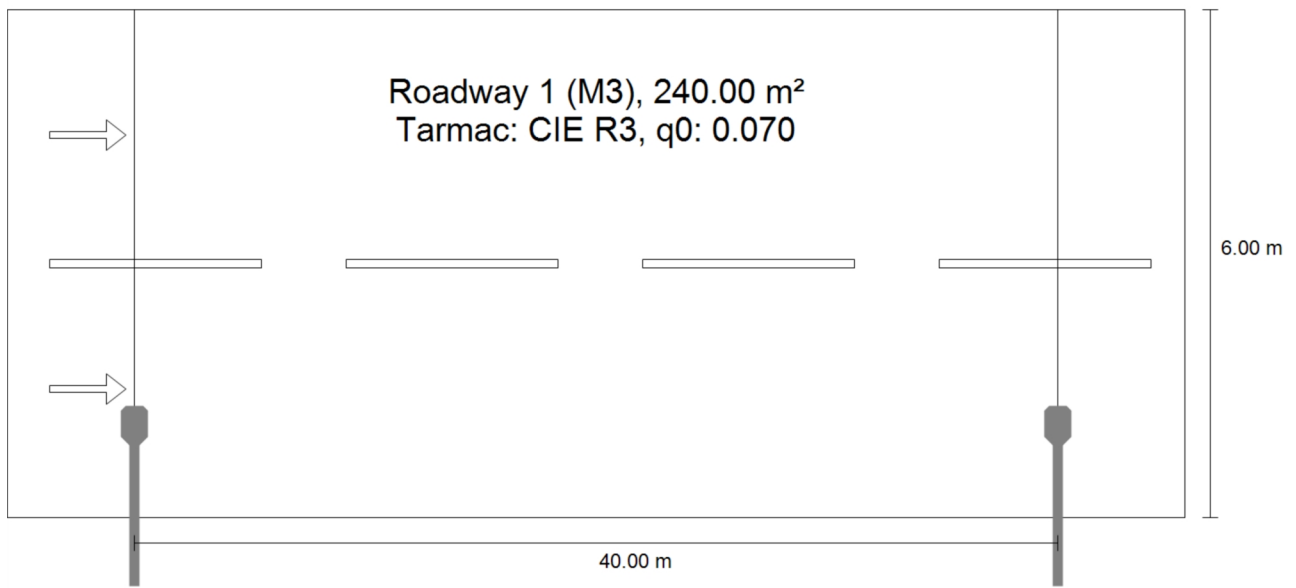
Housing: EN-AB 47100 die-cast aluminium and designed with a very small surface exposed to wind. Cooling fins integrated in the cover. The lid can be removed to access the electrical components. Attachment: in die-cast aluminium for poles with a diameter between min. 46 mm and max. 76 mm, adjustable from -20° to +10° for hockey stick attachment; and from 0° to +20° for mast-top attachment. Tilt pitch 5°. Optics: in high-performance PMMA resistant to high temperatures and UV rays. Diffuser: extra-clear, tempered glass, 4 mm thick, resistant to thermal shock and impact (UNI-EN 12150-1:2001). Coating: pre-treatment of metal surface, polyester powder coating to ensure resistance to corrosion and salt spray fogs, UV stabilised. Special voating: upon request: available with coating tested to withstand corrosion tests in aggressive artificial atmospheres (UNI EN ISO 9227) or marine environments (sea front). Heat Sink: the heat sink is designed and made to allow the LEDs to operate at temperatures capable of ensuring excellent performance/output and long service life. LED: 90%: 100000h (L90B10) Low flicker: luminaire with very low flicker: evenly distributed light for greater visual safety. Photobiological risk: exempt risk group according to EN62471.: EN60598-1. With degree of protection according to EN60529. Registered Design DM/100271. Laboratory tests: compliant with third-party certified vibration tests pursuant to ANSI C136.31: Street Lighting - Luminaire Vibration. Test level: 3.0G Level 2 for bridge/overpass applications. Equipment: - IP67 quick connector. - anti-condensation valve. - temperature controller with auto-reset. - EN 61547 compliant surge protection. - ADVANCED PROG built-in functions. Temperature Chart (Description): -30 °C ÷ +50 °C On request: constant light output (CLO) function. Suitable for emergency lighting systems.



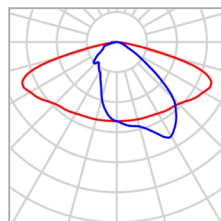
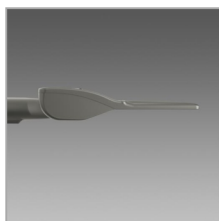
Περιφερειακή οδός Δεσκάτης

## **Description**

**Summary (according to EN 13201:2015)**



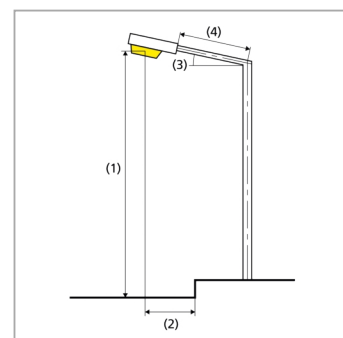
## Summary (according to EN 13201:2015)



Manufacturer	Disano Illuminazione S.p.A	P	102.0 W
Article No.	331062-00	$\Phi_{Lamp}$	15246 lm
Article name	3481 Mini Giovi - high performance - street ME 4000K CRI 70 102W CLD Graphite	$\Phi_{Luminaire}$	15246 lm
Fitting	1x led_3481_192_4k	$\eta$	100.00 %

3481 Mini Giovi - high performance - street ME 4000K CRI 70 102W CLD Graphite (single side bottom)

Pole distance	40.000 m
(1) Light spot height	10.000 m
(2) Light point overhang	1.057 m
(3) Boom inclination	0.0°
(4) Boom length	1.500 m
Annual operating hours	4000 h: 100.0 %, 102.0 W
Wattage / route	2550.0 W/km
ULR / ULOR	0.00 / 0.00
Max. luminous intensities Any direction forming the specified angle from the downward vertical, with the luminaire installed for use.	$\geq 70^\circ$ : 488 cd/klm $\geq 80^\circ$ : 85.3 cd/klm $\geq 90^\circ$ : 0.00 cd/klm
Luminous intensity class The luminous intensity values in [cd/klm] for calculation of the luminous intensity class refer to the luminaire luminous flux according to EN 13201:2015.	G*4
Glare index class	D.2
MF	0.80



**Summary (according to EN 13201:2015)**

## Results for valuation fields

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

	Symbol	Calculated	Target	Check
Roadway 1 (M3)	$L_{av}$	1.23 cd/m <sup>2</sup>	≥ 1.00 cd/m <sup>2</sup>	✓
	$U_o$	0.63	≥ 0.40	✓
	$U_l$	0.80	≥ 0.60	✓
	TI	9 %	≤ 15 %	✓
	$R_{EI}$	0.73	≥ 0.30	✓

## Results for energy efficiency indicators

	Symbol	Calculated	Energy Consumption
Περιφερειακή οδός Δεσκάτης	$D_p$	0.024 W/lx*m <sup>2</sup>	-
3481 Mini Giovi - high performance - street ME 4000K CRI 70 102W CLD Graphite (single side bottom)	$D_e$	1.7 kWh/m <sup>2</sup> yr	408.0 kWh/yr

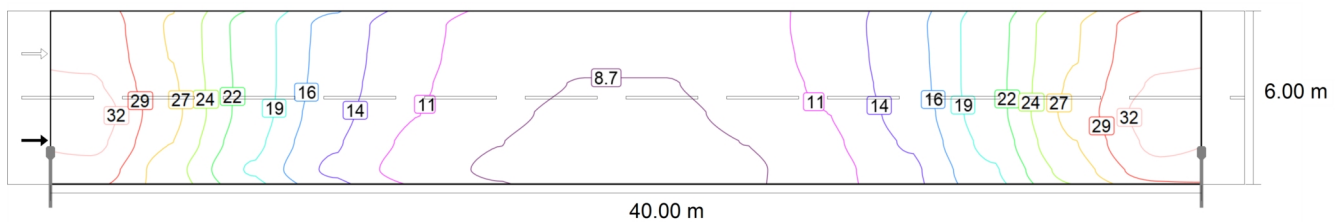
## Roadway 1 (M3)

### Results for valuation field

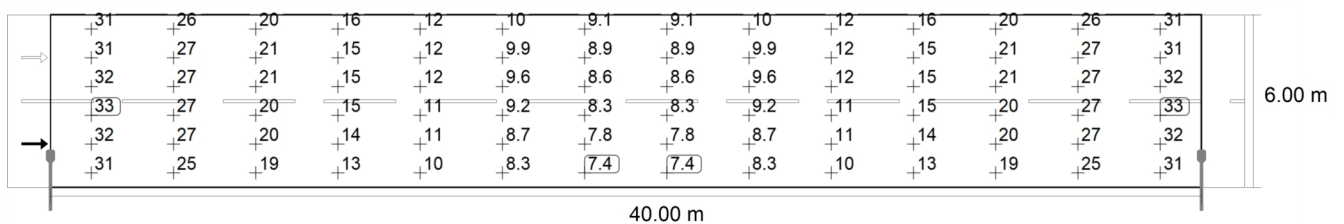
	Symbol	Calculated	Target	Check
Roadway 1 (M3)	$L_{av}$	1.23 cd/m <sup>2</sup>	≥ 1.00 cd/m <sup>2</sup>	✓
	$U_o$	0.63	≥ 0.40	✓
	$U_l$	0.80	≥ 0.60	✓
	TI	9 %	≤ 15 %	✓
	$R_{El}$	0.73	≥ 0.30	✓

### Results for observer

	Symbol	Calculated	Target	Check
Observer 1 Position: -60.000 m, 1.500 m, 1.500 m	$L_{av}$	1.23 cd/m <sup>2</sup>	≥ 1.00 cd/m <sup>2</sup>	✓
	$U_o$	0.63	≥ 0.40	✓
	$U_l$	0.80	≥ 0.60	✓
	TI	9 %	≤ 15 %	✓
Observer 2 Position: -60.000 m, 4.500 m, 1.500 m	$L_{av}$	1.29 cd/m <sup>2</sup>	≥ 1.00 cd/m <sup>2</sup>	✓
	$U_o$	0.68	≥ 0.40	✓
	$U_l$	0.81	≥ 0.60	✓
	TI	9 %	≤ 15 %	✓



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



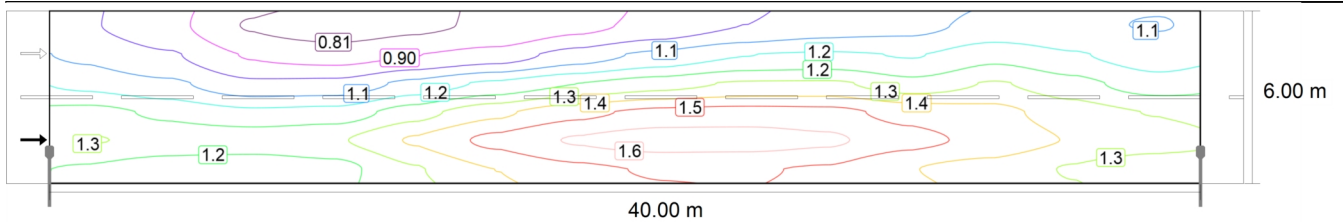
Περιφερειακή οδός Δεσκάτης

### Roadway 1 (M3)

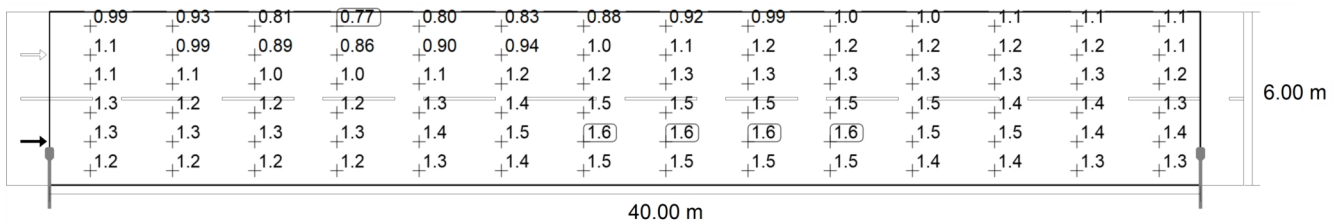
m	1.429	4.286	7.143	10.000	12.857	15.714	18.571	21.429	24.286	27.143	30.000	32.857	35.714	38.571
5.500	30.99	26.48	20.46	15.56	12.14	10.07	9.14	9.14	10.07	12.14	15.56	20.46	26.48	30.99
4.500	31.36	26.59	20.53	15.40	12.01	9.89	8.95	8.95	9.89	12.01	15.40	20.53	26.59	31.36
3.500	32.09	27.02	20.61	15.20	11.70	9.60	8.64	8.64	9.60	11.70	15.20	20.61	27.02	32.09
2.500	33.07	27.42	20.48	14.77	11.29	9.21	8.27	8.27	9.21	11.29	14.77	20.48	27.42	33.07
1.500	32.41	26.67	19.77	14.12	10.78	8.75	7.84	7.84	8.75	10.78	14.12	19.77	26.67	32.41
0.500	30.80	25.25	18.68	13.35	10.22	8.29	7.42	7.42	8.29	10.22	13.35	18.68	25.25	30.80

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

	$E_{av}$	$E_{min}$	$E_{max}$	$g_1$	$g_2$
Maintenance value, horizontal illuminance	17.5 lx	7.42 lx	33.1 lx	0.43	0.22



Observer 1: Maintenance value, luminance with dry roadway [ $cd/m^2$ ] (Iso-illuminance curves)



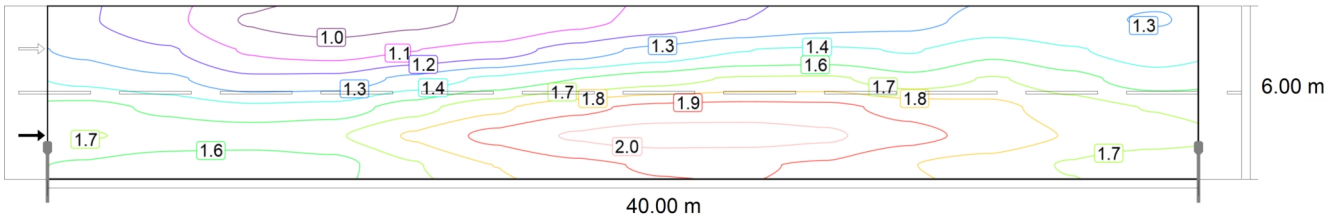
Observer 1: Maintenance value, luminance with dry roadway [ $cd/m^2$ ] (Value grid)

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
5.500	0.99	0.93	0.81	0.77	0.80	0.83	0.88	0.92	0.99	1.03	1.05	1.09	1.08	1.07
4.500	1.05	0.99	0.89	0.86	0.90	0.94	1.03	1.09	1.15	1.17	1.15	1.22	1.16	1.11
3.500	1.13	1.09	1.00	1.01	1.10	1.17	1.24	1.29	1.34	1.34	1.27	1.33	1.27	1.19
2.500	1.27	1.22	1.18	1.19	1.29	1.39	1.47	1.52	1.53	1.52	1.47	1.44	1.37	1.32
1.500	1.33	1.30	1.29	1.32	1.42	1.52	1.59	1.63	1.62	1.60	1.53	1.47	1.41	1.37
0.500	1.23	1.20	1.19	1.21	1.32	1.41	1.48	1.51	1.50	1.49	1.42	1.38	1.32	1.28

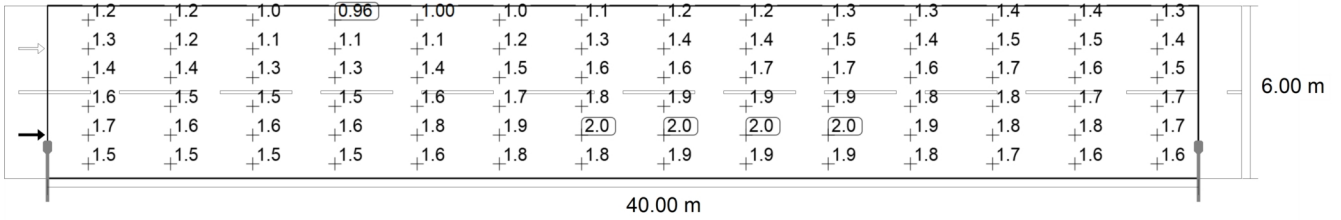
Observer 1: Maintenance value, luminance with dry roadway [ $cd/m^2$ ] (Value chart)

	$L_{av}$	$L_{min}$	$L_{max}$	$g_1$	$g_2$
Observer 1: Maintenance value, luminance with dry roadway	1.23 $cd/m^2$	0.77 $cd/m^2$	1.63 $cd/m^2$	0.63	0.47

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**Roadway 1 (M3)**



Observer 1: Luminance with new installation [cd/m<sup>2</sup>] (Iso-illuminance curves)

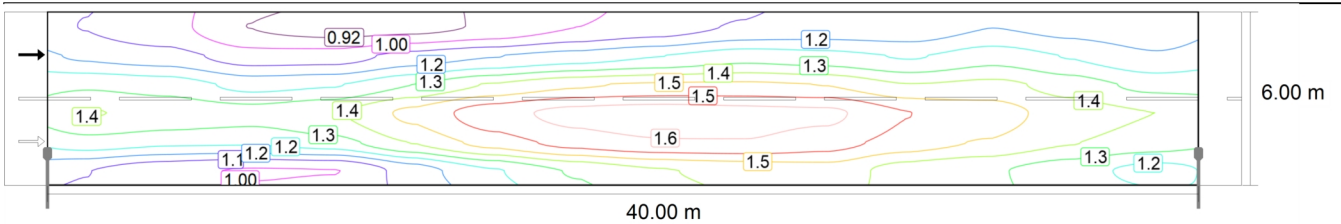


Observer 1: Luminance with new installation [cd/m<sup>2</sup>] (Value grid)

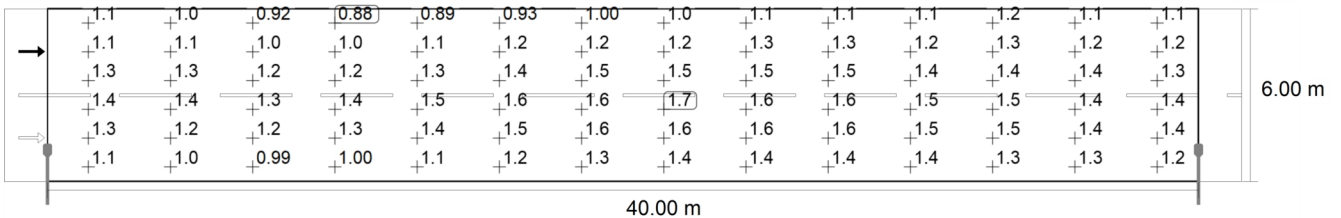
m	1.429	4.286	7.143	10.000	12.857	15.714	18.571	21.429	24.286	27.143	30.000	32.857	35.714	38.571
5.500	1.24	1.16	1.01	0.96	1.00	1.03	1.09	1.16	1.23	1.29	1.31	1.37	1.35	1.33
4.500	1.32	1.24	1.11	1.08	1.12	1.17	1.28	1.37	1.44	1.46	1.44	1.52	1.46	1.39
3.500	1.41	1.36	1.26	1.26	1.37	1.47	1.55	1.61	1.67	1.67	1.59	1.67	1.59	1.49
2.500	1.59	1.52	1.47	1.49	1.61	1.74	1.84	1.90	1.91	1.90	1.83	1.80	1.71	1.65
1.500	1.66	1.62	1.62	1.65	1.78	1.90	1.99	2.03	2.03	2.00	1.91	1.84	1.76	1.71
0.500	1.54	1.49	1.48	1.51	1.65	1.77	1.85	1.88	1.88	1.86	1.77	1.72	1.65	1.59

Observer 1: Luminance with new installation [cd/m<sup>2</sup>] (Value chart)

	L <sub>av</sub>	L <sub>min</sub>	L <sub>max</sub>	g <sub>1</sub>	g <sub>2</sub>
Observer 1: Luminance with new installation	1.54 cd/m <sup>2</sup>	0.96 cd/m <sup>2</sup>	2.03 cd/m <sup>2</sup>	0.63	0.47



Observer 2: Maintenance value, luminance with dry roadway [cd/m<sup>2</sup>] (Iso-illuminance curves)



Observer 2: Maintenance value, luminance with dry roadway [cd/m<sup>2</sup>] (Value grid)

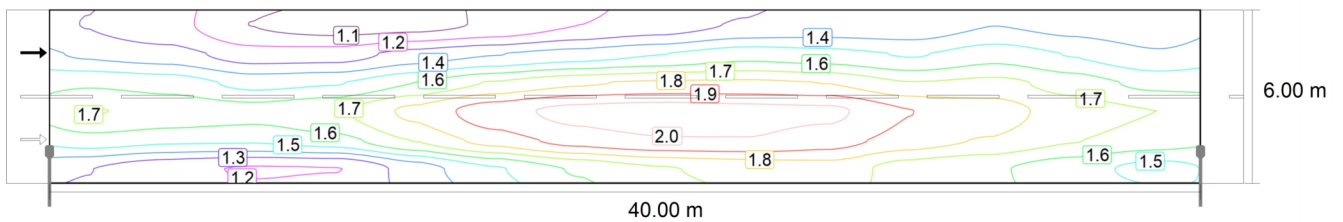
m	1.429	4.286	7.143	10.000	12.857	15.714	18.571	21.429	24.286	27.143	30.000	32.857	35.714	38.571
5.500	1.07	1.03	0.92	0.88	0.89	0.93	1.00	1.03	1.08	1.11	1.11	1.15	1.13	1.11
4.500	1.14	1.11	1.04	1.04	1.11	1.15	1.19	1.23	1.28	1.26	1.23	1.28	1.23	1.17
3.500	1.30	1.28	1.21	1.23	1.31	1.40	1.46	1.48	1.48	1.46	1.39	1.41	1.35	1.29
2.500	1.39	1.37	1.34	1.38	1.49	1.59	1.65	1.66	1.65	1.64	1.55	1.51	1.43	1.39

Περιφερειακή οδός Δεσκάτης  
**Roadway 1 (M3)**

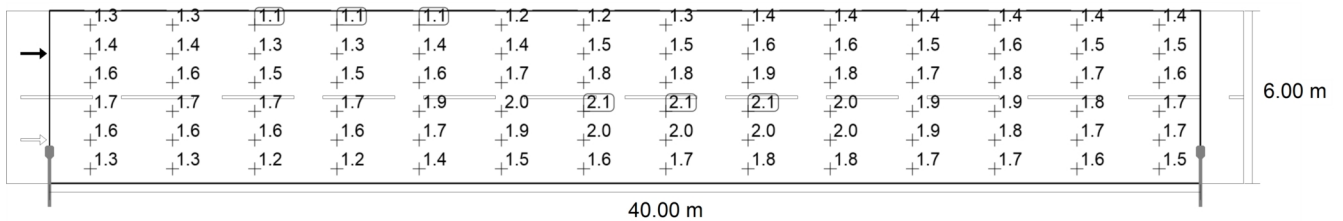
m	1.429	4.286	7.143	10.000	12.857	15.714	18.571	21.429	24.286	27.143	30.000	32.857	35.714	38.571
1.500	1.27	1.25	1.24	1.28	1.39	1.50	1.58	1.61	1.62	1.58	1.51	1.46	1.39	1.35
0.500	1.08	1.02	0.99	1.00	1.11	1.23	1.32	1.38	1.41	1.43	1.35	1.32	1.27	1.21

Observer 2: Maintenance value, luminance with dry roadway [ $\text{cd}/\text{m}^2$ ] (Value chart)

	$L_{av}$	$L_{min}$	$L_{max}$	$g_1$	$g_2$
Observer 2: Maintenance value, luminance with dry roadway	1.29 $\text{cd}/\text{m}^2$	0.88 $\text{cd}/\text{m}^2$	1.66 $\text{cd}/\text{m}^2$	0.68	0.53



Observer 2: Luminance with new installation [ $\text{cd}/\text{m}^2$ ] (Iso-illuminance curves)



Observer 2: Luminance with new installation [ $\text{cd}/\text{m}^2$ ] (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
5.500	1.34	1.28	1.15	1.10	1.11	1.17	1.25	1.29	1.36	1.38	1.44	1.41	1.39	
4.500	1.42	1.39	1.29	1.30	1.38	1.44	1.49	1.54	1.60	1.58	1.53	1.60	1.53	1.46
3.500	1.62	1.60	1.51	1.53	1.64	1.75	1.82	1.85	1.85	1.83	1.74	1.76	1.69	1.61
2.500	1.74	1.71	1.67	1.72	1.86	1.99	2.06	2.08	2.06	2.05	1.93	1.88	1.79	1.74
1.500	1.59	1.56	1.55	1.60	1.74	1.87	1.97	2.02	2.02	1.98	1.89	1.82	1.74	1.69
0.500	1.35	1.28	1.24	1.25	1.39	1.53	1.65	1.73	1.76	1.79	1.69	1.65	1.58	1.51

Observer 2: Luminance with new installation [ $\text{cd}/\text{m}^2$ ] (Value chart)

	$L_{av}$	$L_{min}$	$L_{max}$	$g_1$	$g_2$
Observer 2: Luminance with new installation	1.61 $\text{cd}/\text{m}^2$	1.10 $\text{cd}/\text{m}^2$	2.08 $\text{cd}/\text{m}^2$	0.68	0.53