

PROJECT 2

DESIGN REQUIREMENT ME 2

LUMINAIRE - ALF12040 - 120W

MEDIAN (2 LANE)
SINGLE SIDED (2 LANE)

Partner for Contact:
Order No.:
Company:
Customer No.:

Date: 23.08.2019
Operator: NURUL ASHIKIN BINTI MOHD RODZI

GRUPPE LIGHTING SOLUTION SDN BHD

 NO 9, JALAN ANGGERIK MOKARA 31/60, KOTA KEMUNING,
 SEKSYEN 31,
 40460 SHAH ALAM, SELANGOR DARUL EHSAN

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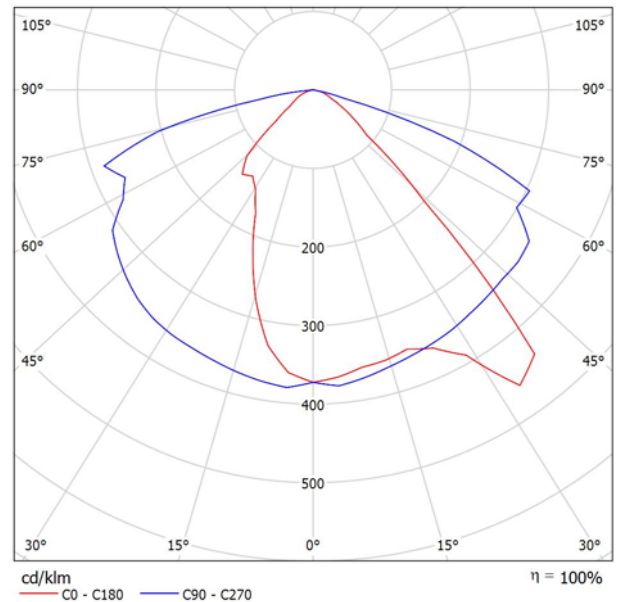
NO 9, JALAN ANGGERIK MOKARA 31/60, KOTA KEMUNING,
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ALF12040-120W/ Luminaire Data Sheet

Luminous emittance 1:

See our luminaire catalog for an image of the luminaire.



Luminaire classification according to CIE: 100
CIE flux code: 49 85 99 100 100

Due to missing symmetry properties, no UGR table can be displayed for this luminaire.

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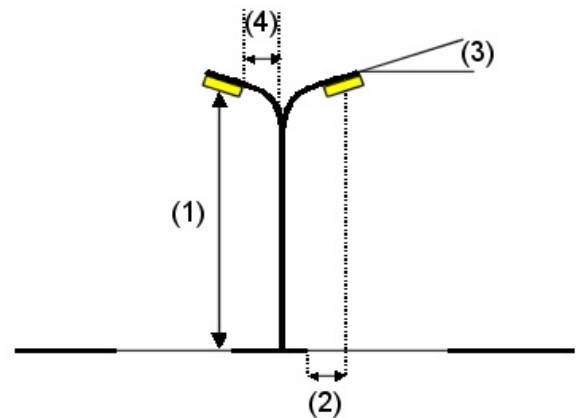
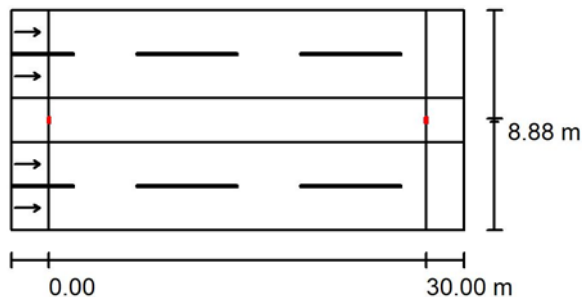
MEDIAN (2 LANE) / Planning data

Street Profile

Roadway 2 (Width: 7.000 m, Number of lanes: 2, tarmac: R3, q0: 0.070)
 Median 1 (Width: 3.500 m, Height: 0.000 m)
 Roadway 1 (Width: 7.000 m, Number of lanes: 2, tarmac: R3, q0: 0.070)

Light loss factor: 0.80

Luminaire Arrangements



Luminaire: ALF12040 - 120W

Luminous flux (Luminaire): 15324 lm
 Luminous flux (Lamps): 15327 lm
 Luminaire Wattage: 120.0 W
 Arrangement: on Median
 Pole Distance: 30.000 m
 Mounting Height (1): 10.000 m
 Height: 10.000 m
 Overhang (2): -1.375 m
 Boom Angle (3): 5.0 °
 Boom Length (4): 0.125 m

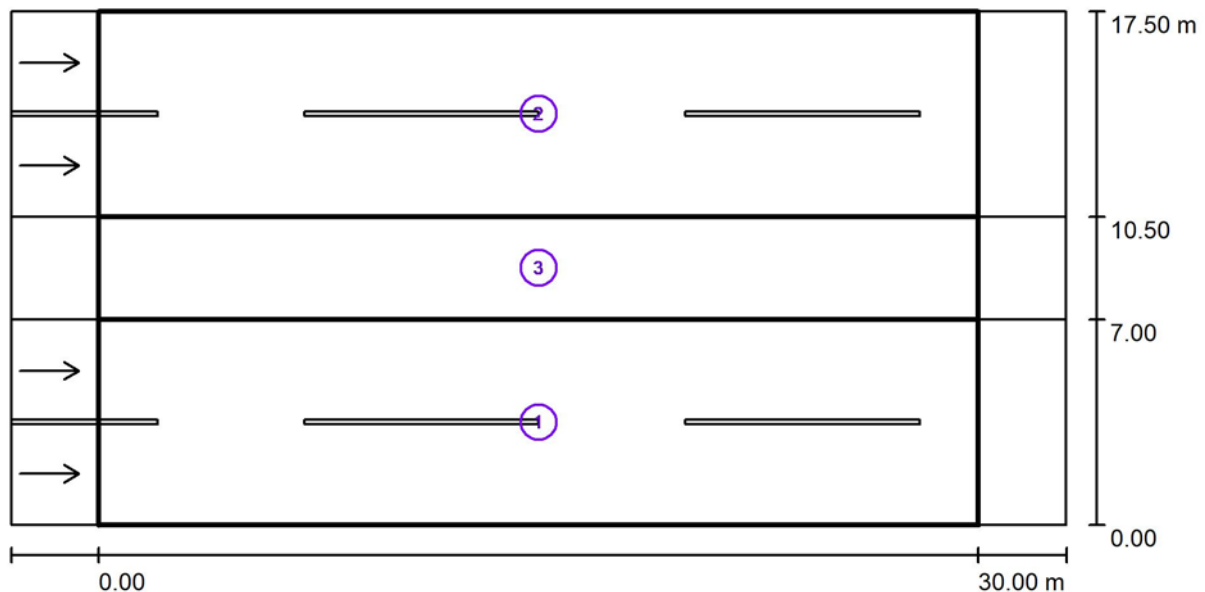
Maximum luminous intensities
 at 70°: 337 cd/klm
 at 80°: 72 cd/klm
 at 90°: 2.60 cd/klm

Any direction forming the specified angle from the downward vertical, with the luminaire installed for use.

Arrangement complies with luminous intensity class G3.
 Arrangement complies with glare index class D.4.

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MEDIAN (2 LANE) / Photometric Results

Light loss factor: 0.80

Scale 1:258

Calculation Field List

- 1 Valuation Field Roadway 1
 Length: 30.000 m, Width: 7.000 m
 Grid: 10 x 6 Points
 Accompanying Street Elements: Roadway 1.
 tarmac: R3, q0: 0.070
 Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.75	0.44	0.81	8	1.03
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

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MEDIAN (2 LANE) / Photometric Results

Calculation Field List

2 Valuation Field Roadway 2

Length: 30.000 m, Width: 7.000 m

Grid: 10 x 6 Points

Accompanying Street Elements: Roadway 2.

tarmac: R3, q0: 0.070

Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.63	0.43	0.72	5	1.03
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

3 Valuation Field Median 1

Length: 30.000 m, Width: 3.500 m

Grid: 10 x 3 Points

Accompanying Street Elements: Median 1.

Selected Lighting Class: CE5

(All lighting performance requirements are met.)

	E_{av} [lx]	U0
Calculated values:	50.95	0.49
Required values according to class:	≥ 7.50	≥ 0.40
Fulfilled/Not fulfilled:	✓	✓

PROJECT 2

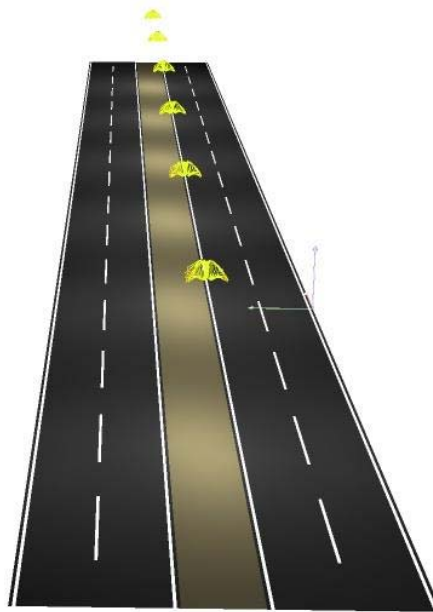
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MEDIAN (2 LANE) / 3D Rendering



The nominal values shown in this report are the results of precision calculation based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the value may vary due to tolerances on luminaires positioning, reflection properties and electrical supply.

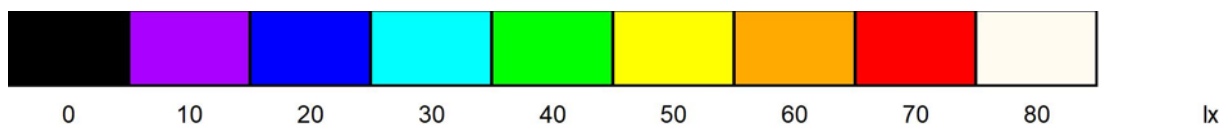
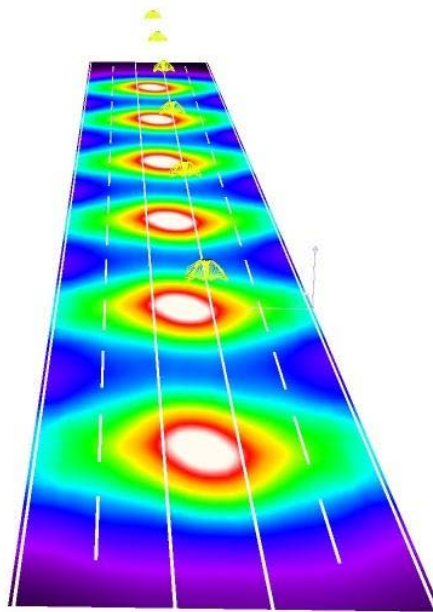
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MEDIAN (2 LANE) / False Color Rendering



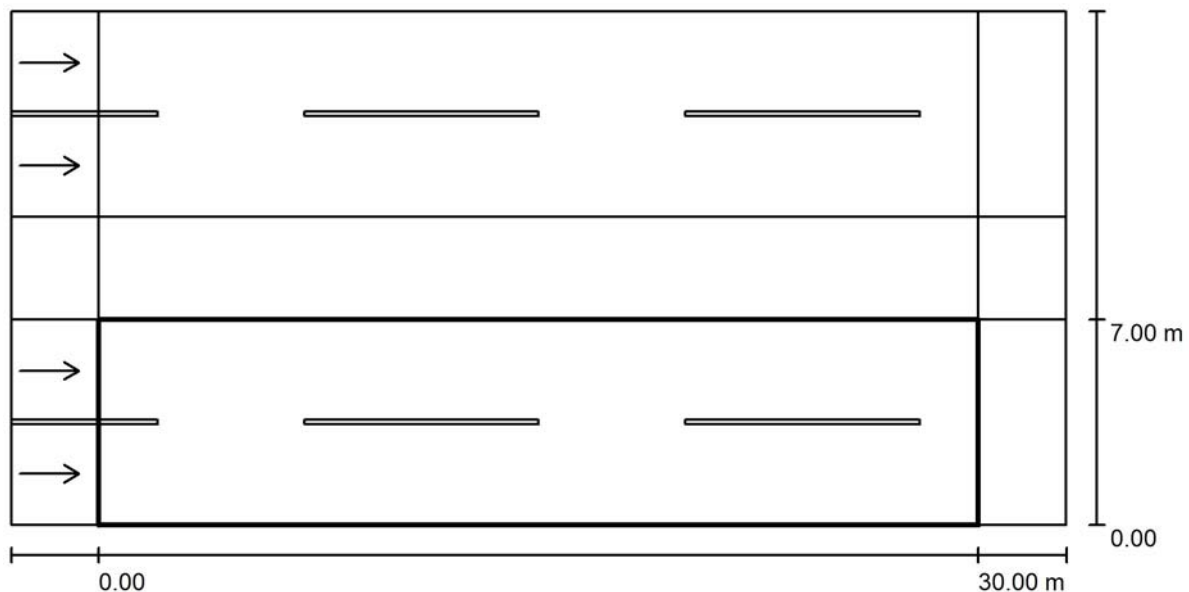
The nominal values shown in this report are the results of precision calculation based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practise the value may vary due to tolerances on luminaires positioning reflection properties and electrical supply.

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Results overview



Light loss factor: 0.80

Scale 1:258

Grid: 10 x 6 Points

Accompanying Street Elements: Roadway 1.

tarmac: R3, q0: 0.070

Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.75	0.44	0.81	8	1.03
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

Assigned observer (2 Pieces):

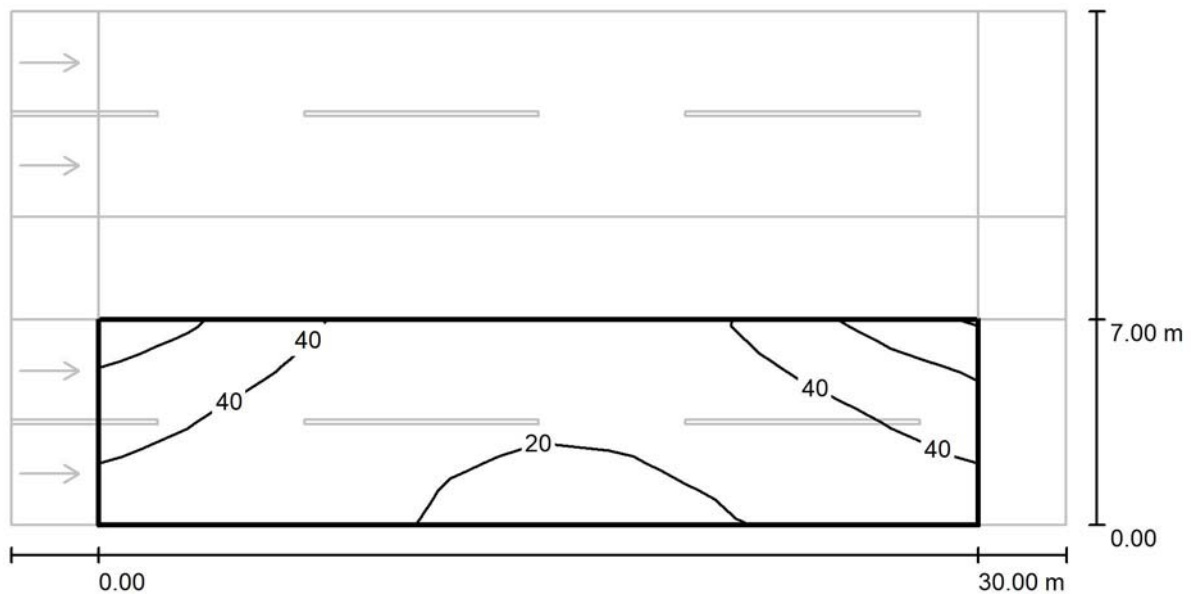
No.	Observer	Position [m]	L_{av} [cd/m ²]	U0	UI	TI [%]
1	Observer 1	(-60.000, 1.750, 1.500)	1.94	0.44	0.81	4
2	Observer 2	(-60.000, 5.250, 1.500)	1.75	0.46	0.84	8

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Isolines (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

 E_{av} [lx]
 33

 E_{min} [lx]
 15

 E_{max} [lx]
 70

 u_0
 0.463

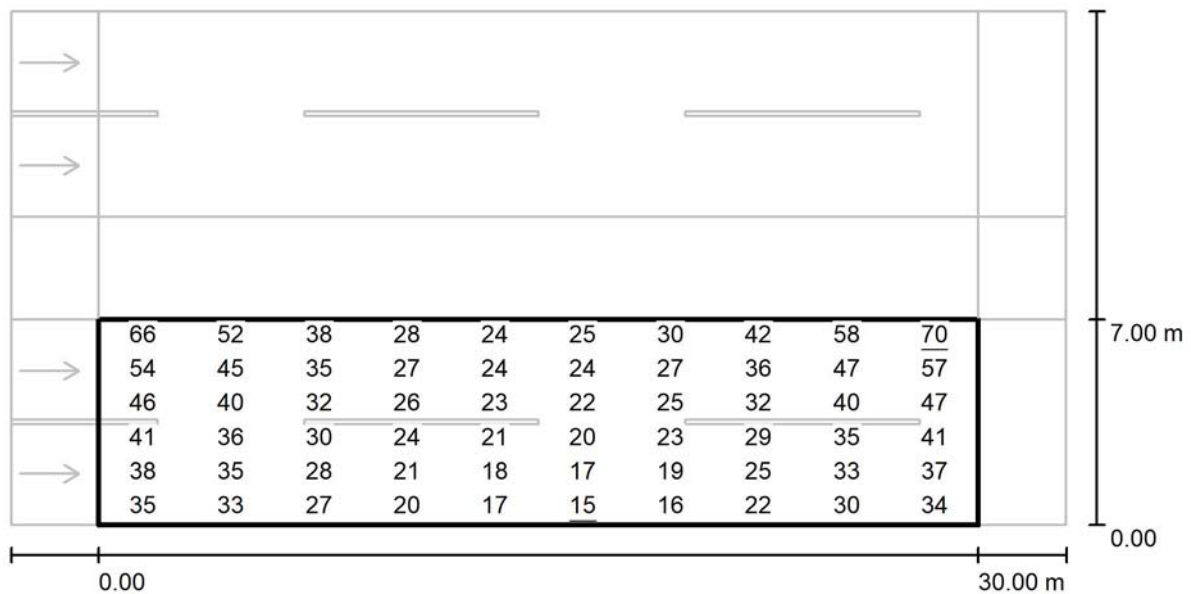
 E_{min} / E_{max}
 0.215

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Value Chart (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

 E_{av} [lx]
 33

 E_{min} [lx]
 15

 E_{max} [lx]
 70

 u_0
 0.463

 E_{min} / E_{max}
 0.215

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Table (E)

6.417	66	52	38	28	24	25	30	42	58	<u>70</u>
5.250	54	45	35	27	24	24	27	36	47	57
4.083	46	40	32	26	23	22	25	32	40	47
2.917	41	36	30	24	21	20	23	29	35	41
1.750	38	35	28	21	18	17	19	25	33	37
0.583	35	33	27	20	17	<u>15</u>	16	22	30	34
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Lux.

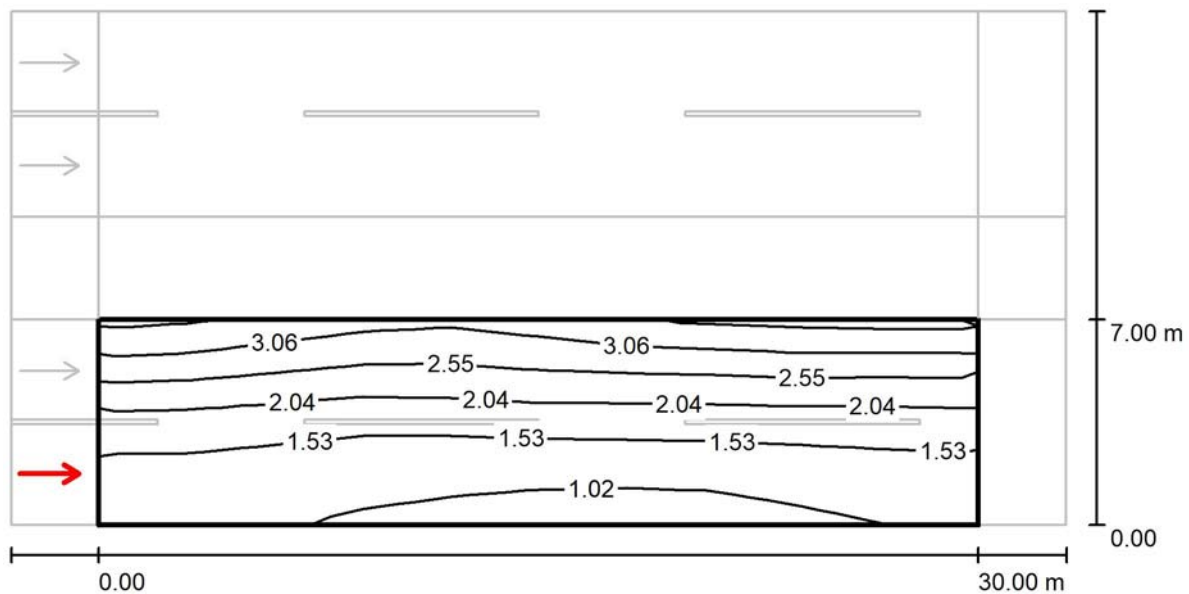
Grid: 10 x 6 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
33	15	70	0.463	0.215

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Observer 1 / Isolines (L)
Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 1.750 m, 1.500 m)

tarmac: R3, q0: 0.070

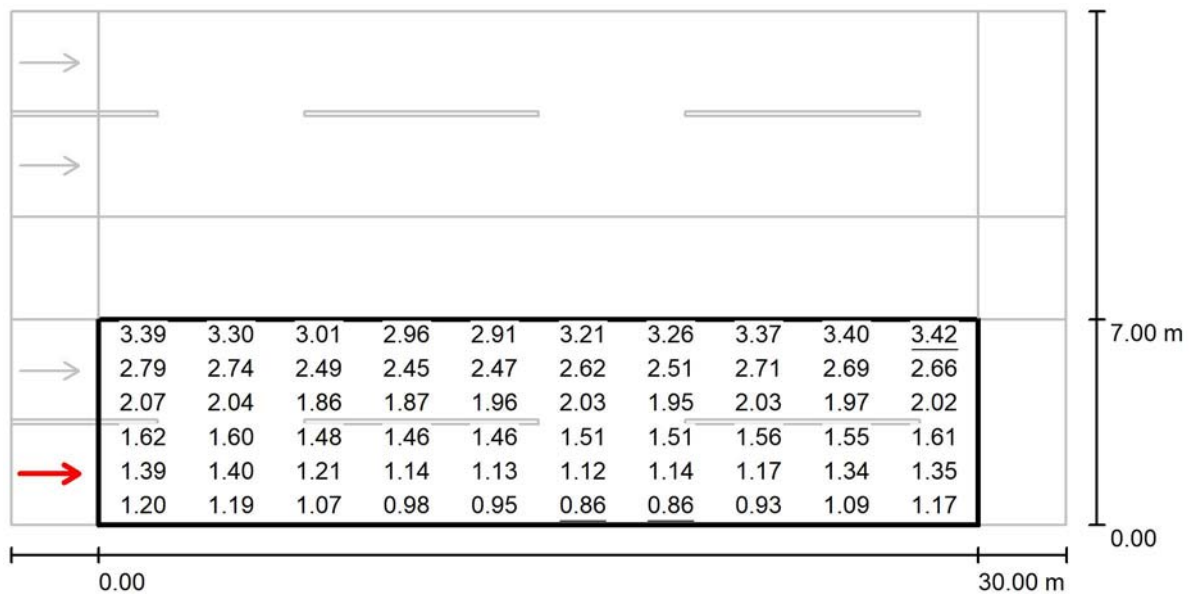
	L_{av} [cd/m ²]	U0	UI	TI [%]
Calculated values:	1.94	0.44	0.81	4
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Observer 1 / Value Chart (L)



Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 1.750 m, 1.500 m)

tarmac: R3, q0: 0.070

	L_{av} [cd/m²]	U0	UI	TI [%]
Calculated values:	1.94	0.44	0.81	4
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Observer 1 / Table (L)


6.417	3.39	3.30	3.01	2.96	2.91	3.21	3.26	3.37	3.40	3.42
5.250	2.79	2.74	2.49	2.45	2.47	2.62	2.51	2.71	2.69	2.66
4.083	2.07	2.04	1.86	1.87	1.96	2.03	1.95	2.03	1.97	2.02
2.917	1.62	1.60	1.48	1.46	1.46	1.51	1.51	1.56	1.55	1.61
1.750	1.39	1.40	1.21	1.14	1.13	1.12	1.14	1.17	1.34	1.35
0.583	1.20	1.19	1.07	0.98	0.95	0.86	0.86	0.93	1.09	1.17
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Candela/m².

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 1.750 m, 1.500 m)

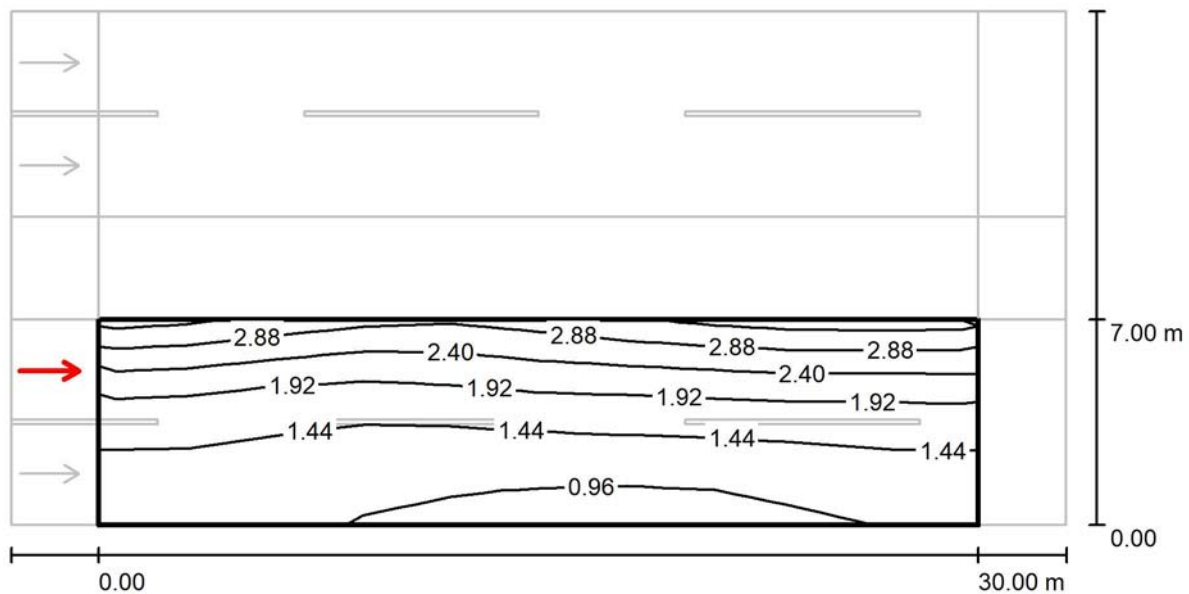
tarmac: R3, q0: 0.070

	L_{av} [cd/m²]	U0	UI	TI [%]
Calculated values:	1.94	0.44	0.81	4
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Observer 2 / Isolines (L)
Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 5.250 m, 1.500 m)

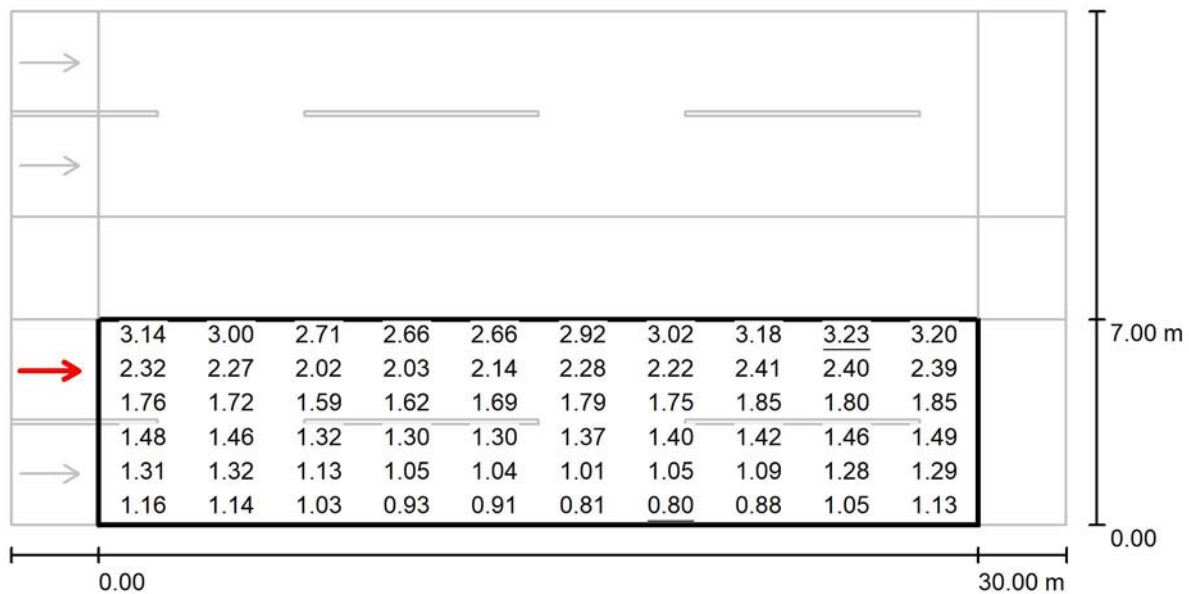
tarmac: R3, q0: 0.070

	L_{av} [cd/m ²]	U0	UI	TI [%]
Calculated values:	1.75	0.46	0.84	8
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Observer 2 / Value Chart (L)
Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 5.250 m, 1.500 m)

tarmac: R3, q0: 0.070

	L_{av} [cd/m ²]	U0	UI	TI [%]
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Fulfilled/Not fulfilled:	✓	✓	✓	✓

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MEDIAN (2 LANE) / Valuation Field Roadway 1 / Observer 2 / Table (L)


6.417	3.14	3.00	2.71	2.66	2.66	2.92	3.02	3.18	3.23	3.20
5.250	2.32	2.27	2.02	2.03	2.14	2.28	2.22	2.41	2.40	2.39
4.083	1.76	1.72	1.59	1.62	1.69	1.79	1.75	1.85	1.80	1.85
2.917	1.48	1.46	1.32	1.30	1.30	1.37	1.40	1.42	1.46	1.49
1.750	1.31	1.32	1.13	1.05	1.04	1.01	1.05	1.09	1.28	1.29
0.583	1.16	1.14	1.03	0.93	0.91	0.81	0.80	0.88	1.05	1.13
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Candela/m².

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 5.250 m, 1.500 m)

tarmac: R3, q0: 0.070

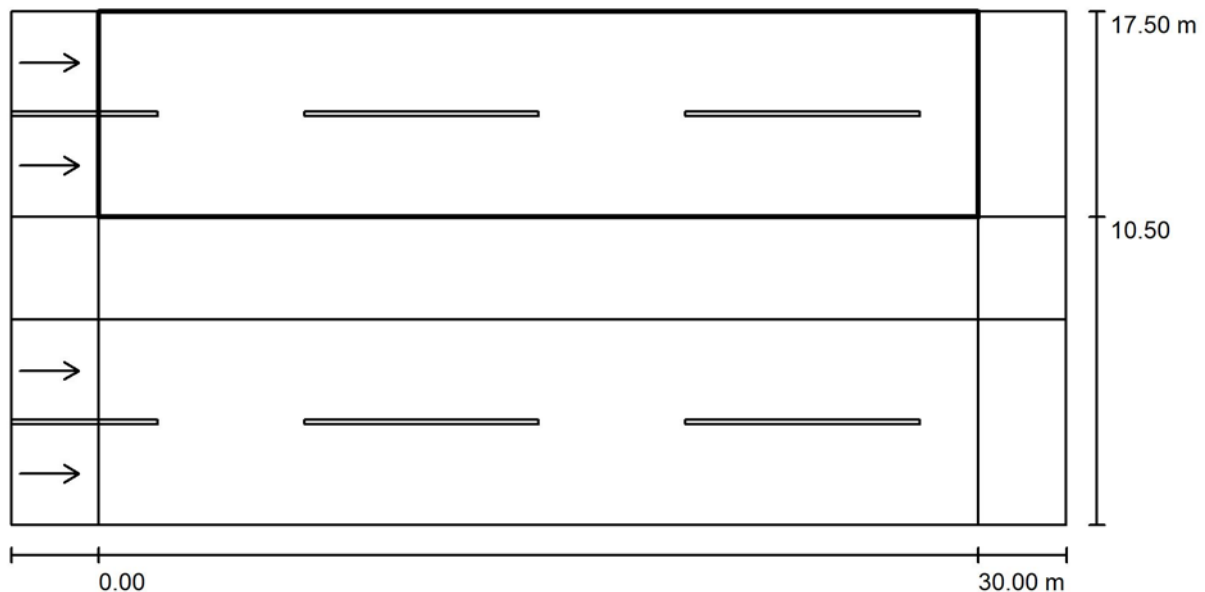
	L_{av} [cd/m²]	U0	UI	TI [%]
Calculated values:	1.75	0.46	0.84	8
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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MEDIAN (2 LANE) / Valuation Field Roadway 2 / Results overview



Light loss factor: 0.80

Scale 1:258

Grid: 10 x 6 Points

Accompanying Street Elements: Roadway 2.

tarmac: R3, q0: 0.070

Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.63	0.43	0.72	5	1.03
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

Assigned observer (2 Pieces):

No.	Observer	Position [m]	L_{av} [cd/m ²]	U0	UI	TI [%]
1	Observer 3	(-60.000, 12.250, 1.500)	1.63	0.45	0.86	5
2	Observer 4	(-60.000, 15.750, 1.500)	1.77	0.43	0.72	2

PROJECT 2

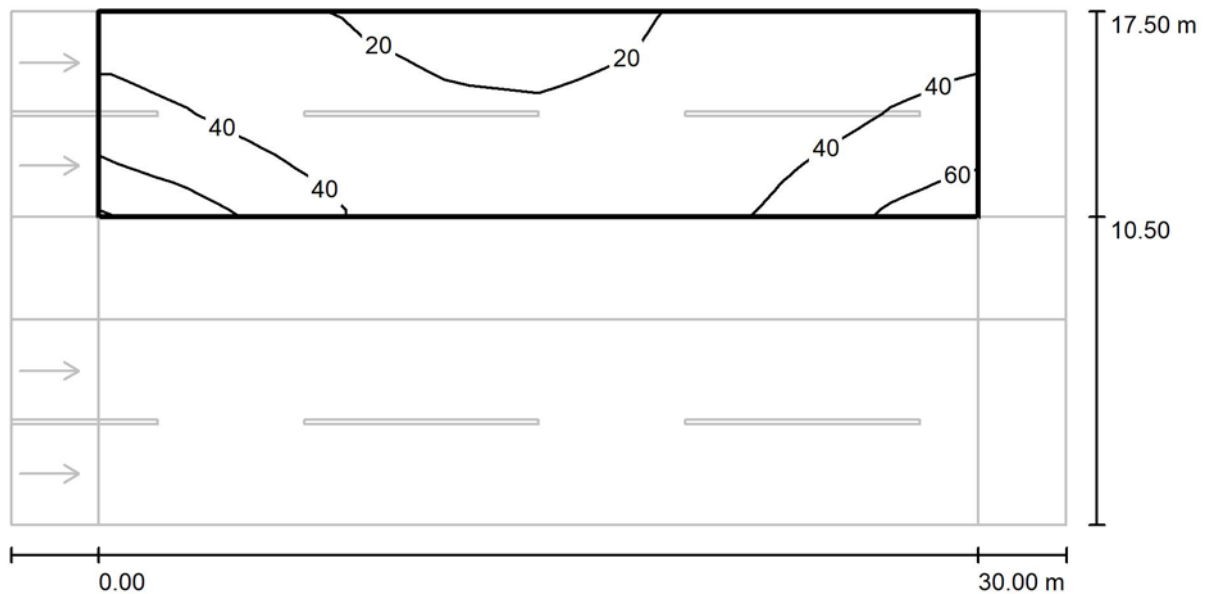
23.08.2019

GRUPPE LIGHTING SOLUTION SDN BHD

NO 9, JALAN ANGGERIK MOKARA 31/60, KOTA KEMUNING,
SEKSYEN 31,
40460 SHAH ALAM, SELANGOR DARUL EHSAN

Operator NURUL ASHIKIN BINTI MOHD RODZI
Telephone 03-55254133
Fax 03-55254122
e-Mail ashikin@gruppelighting.com

MEDIAN (2 LANE) / Valuation Field Roadway 2 / Isolines (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

E_{av} [lx]
33

E_{min} [lx]
15

E_{max} [lx]
70

u_0
0.463

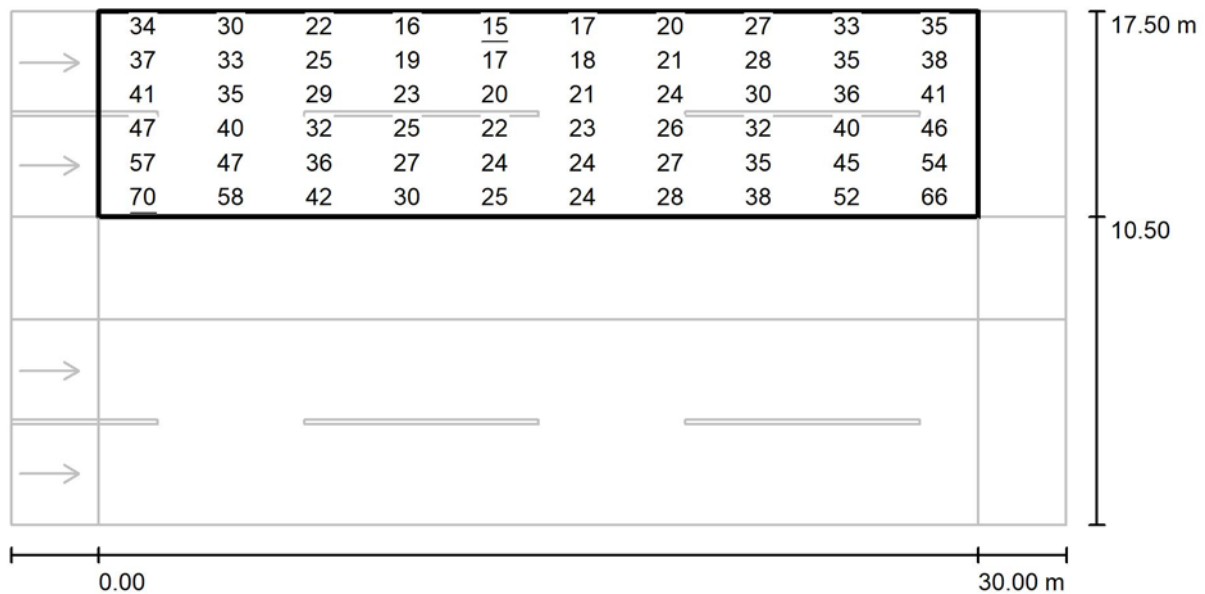
E_{min} / E_{max}
0.215

GRUPPE LIGHTING SOLUTION SDN BHD

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MEDIAN (2 LANE) / Valuation Field Roadway 2 / Value Chart (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

 E_{av} [lx]
 33

 E_{min} [lx]
 15

 E_{max} [lx]
 70

 u_0
 0.463

 E_{min} / E_{max}
 0.215

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MEDIAN (2 LANE) / Valuation Field Roadway 2 / Table (E)



6.417	34	30	22	16	<u>15</u>	17	20	27	33	35
5.250	37	33	25	19	17	18	21	28	35	38
4.083	41	35	29	23	20	21	24	30	36	41
2.917	47	40	32	25	22	23	26	32	40	46
1.750	57	47	36	27	24	24	27	35	45	54
0.583	<u>70</u>	58	42	30	25	24	28	38	52	66
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Lux.

Grid: 10 x 6 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
33	15	70	0.463	0.215

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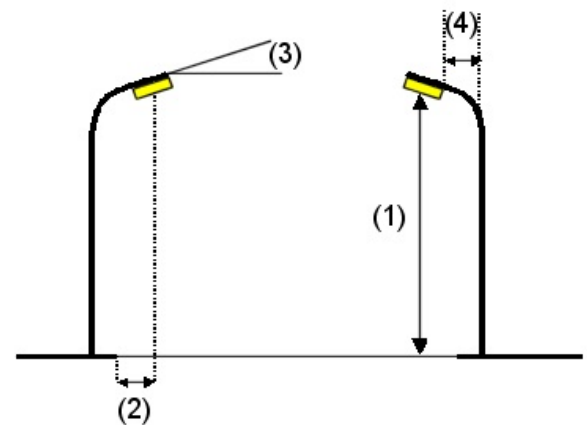
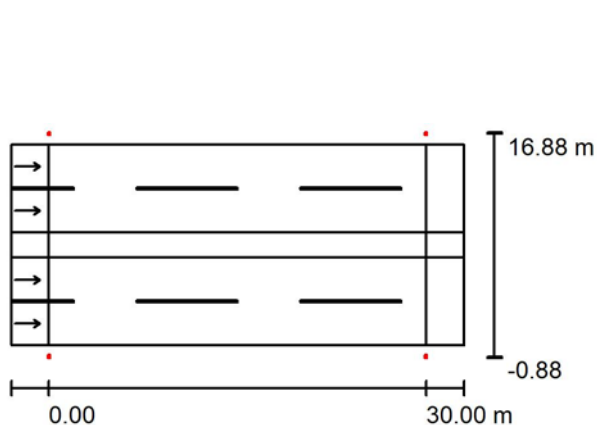
SINGLE SIDED (2 LANE) / Planning data

Street Profile

Roadway 2 (Width: 7.000 m, Number of lanes: 2, tarmac: R3, q0: 0.070)
 Median 1 (Width: 2.000 m, Height: 0.000 m)
 Roadway 1 (Width: 7.000 m, Number of lanes: 2, tarmac: R3, q0: 0.070)

Light loss factor: 0.80

Luminaire Arrangements



Luminaire: ALF12040-120W
 Luminous flux (Luminaire): 15324 lm
 Luminous flux (Lamps): 15327 lm
 Luminaire Wattage: 120.0 W
 Arrangement: Double row, opposing
 Pole Distance: 30.000 m
 Mounting Height (1): 10.000 m
 Height: 10.000 m
 Overhang (2): -0.875 m
 Boom Angle (3): 5.0 °
 Boom Length (4): 0.125 m

Maximum luminous intensities

at 70°: 337 cd/klm
 at 80°: 72 cd/klm
 at 90°: 2.60 cd/klm

Any direction forming the specified angle from the downward vertical, with the luminaire installed for use.

Arrangement complies with luminous intensity class G3.

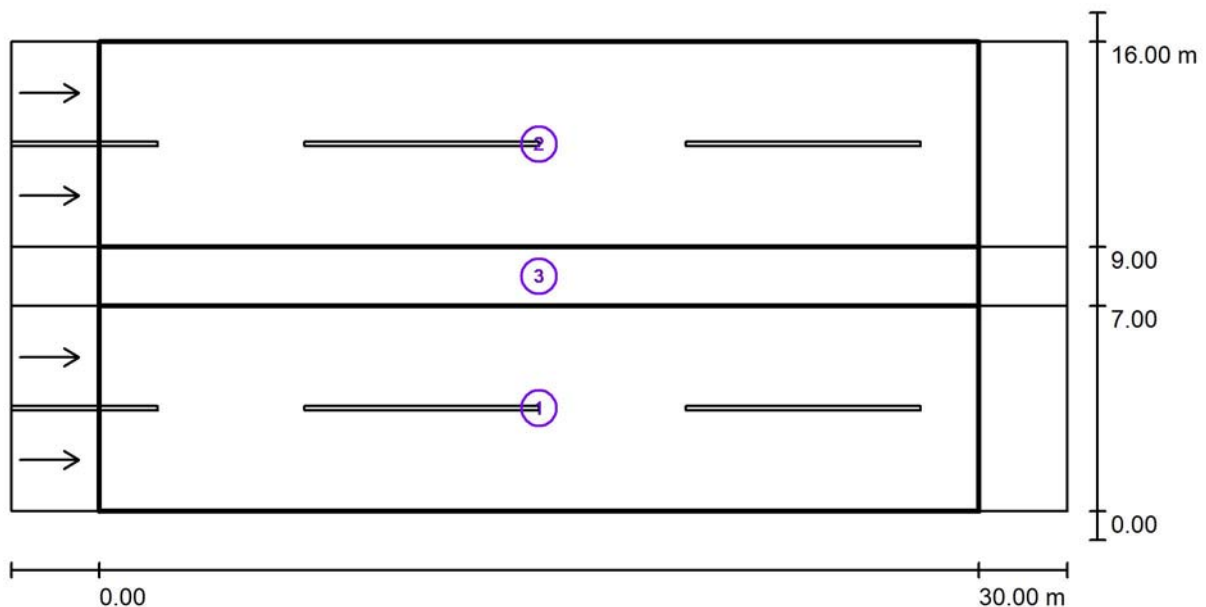
Arrangement complies with glare index class D.4.

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SINGLE SIDED (2 LANE) / Photometric Results



Light loss factor: 0.80

Scale 1:258

Calculation Field List

- Valuation Field Roadway 1
 Length: 30.000 m, Width: 7.000 m
 Grid: 10 x 6 Points
 Accompanying Street Elements: Roadway 1.
 tarmac: R3, q0: 0.070
 Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.52	0.76	0.72	4	1.04
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

GRUPPE LIGHTING SOLUTION SDN BHD

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SINGLE SIDED (2 LANE) / Photometric Results

Calculation Field List

2 Valuation Field Roadway 2

Length: 30.000 m, Width: 7.000 m

Grid: 10 x 6 Points

Accompanying Street Elements: Roadway 2.

tarmac: R3, q0: 0.070

Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.62	0.80	0.80	7	1.04
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

3 Valuation Field Median 1

Length: 30.000 m, Width: 2.000 m

Grid: 10 x 3 Points

Accompanying Street Elements: Median 1.

Selected Lighting Class: CE5

(All lighting performance requirements are met.)

	E_{av} [lx]	U0
Calculated values:	40.55	0.72
Required values according to class:	≥ 7.50	≥ 0.40
Fulfilled/Not fulfilled:	✓	✓

PROJECT 2

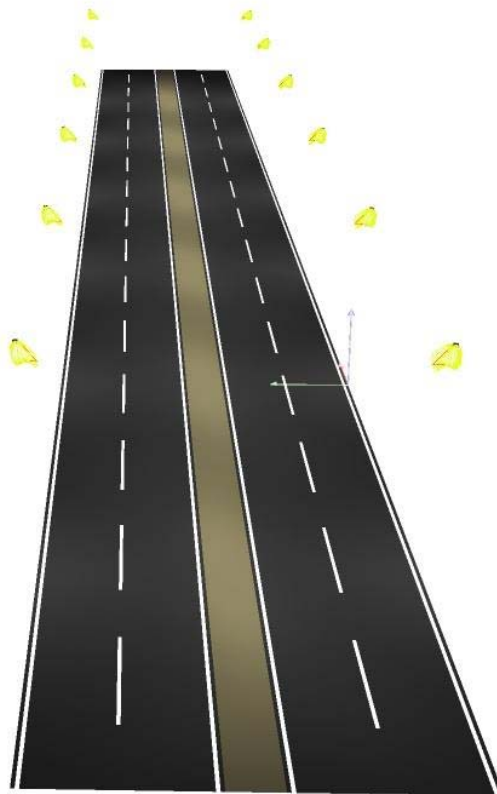
23.08.2019

GRUPPE LIGHTING SOLUTION SDN BHD

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SINGLE SIDED (2 LANE) / 3D Rendering



The nominal values shown in this report are the results of precision calculation based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the value may vary due to tolerances on luminaires positioning, reflection properties and electrical supply.

PROJECT 2

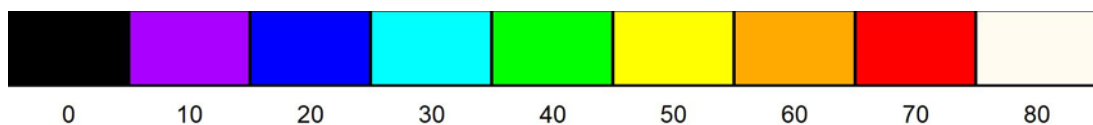
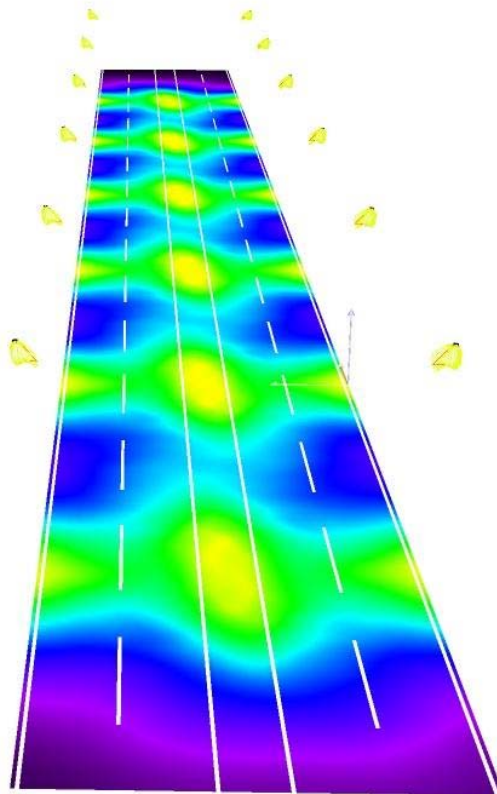
23.08.2019

GRUPPE LIGHTING SOLUTION SDN BHD

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SINGLE SIDED (2 LANE) / False Color Rendering



lx

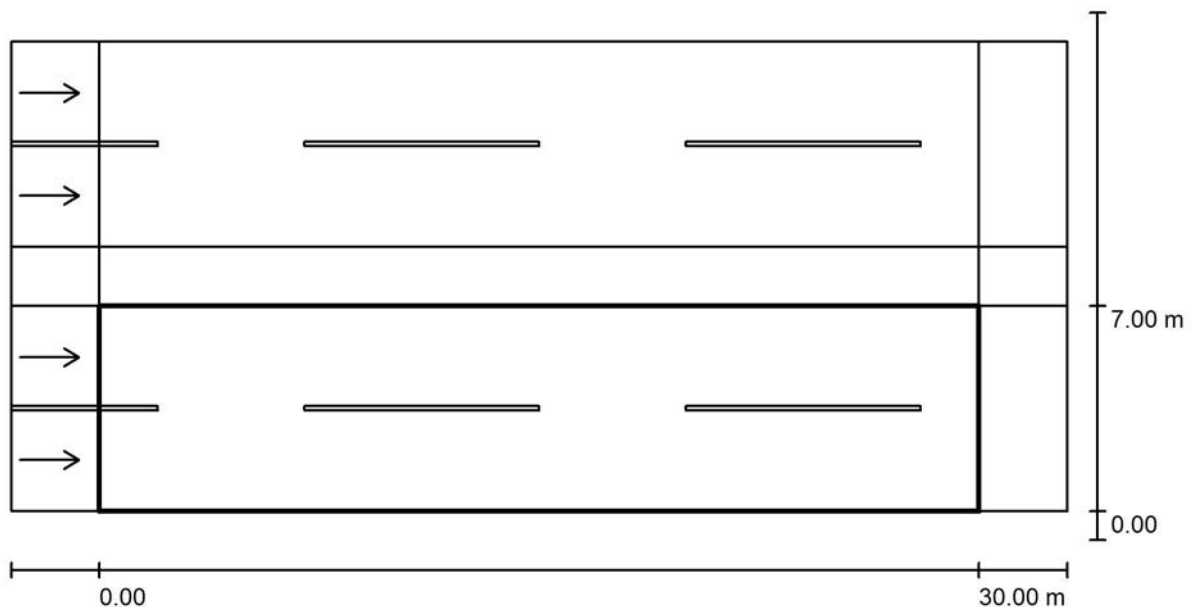
The nominal values shown in this report are the results of precision calculation based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practise the value may vary due to tolerances on luminaires positioning reflection properties and electrical supply.

GRUPPE LIGHTING SOLUTION SDN BHD

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Results overview



Light loss factor: 0.80

Scale 1:258

Grid: 10 x 6 Points

Accompanying Street Elements: Roadway 1.

tarmac: R3, q0: 0.070

Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.52	0.76	0.72	4	1.04
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

Assigned observer (2 Pieces):

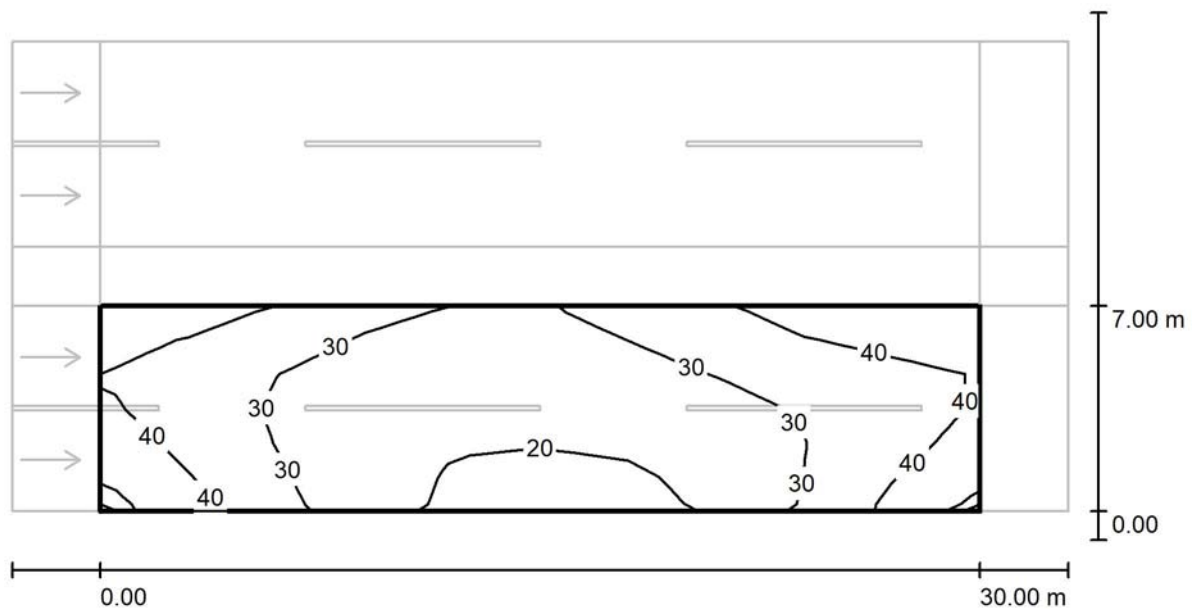
No.	Observer	Position [m]	L_{av} [cd/m ²]	U0	UI	TI [%]
1	Observer 1	(-60.000, 1.750, 1.500)	1.52	0.76	0.89	4
2	Observer 2	(-60.000, 5.250, 1.500)	1.57	0.76	0.72	3

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Isolines (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

 E_{av} [lx]
 31

 E_{min} [lx]
 16

 E_{max} [lx]
 48

 u_0
 0.530

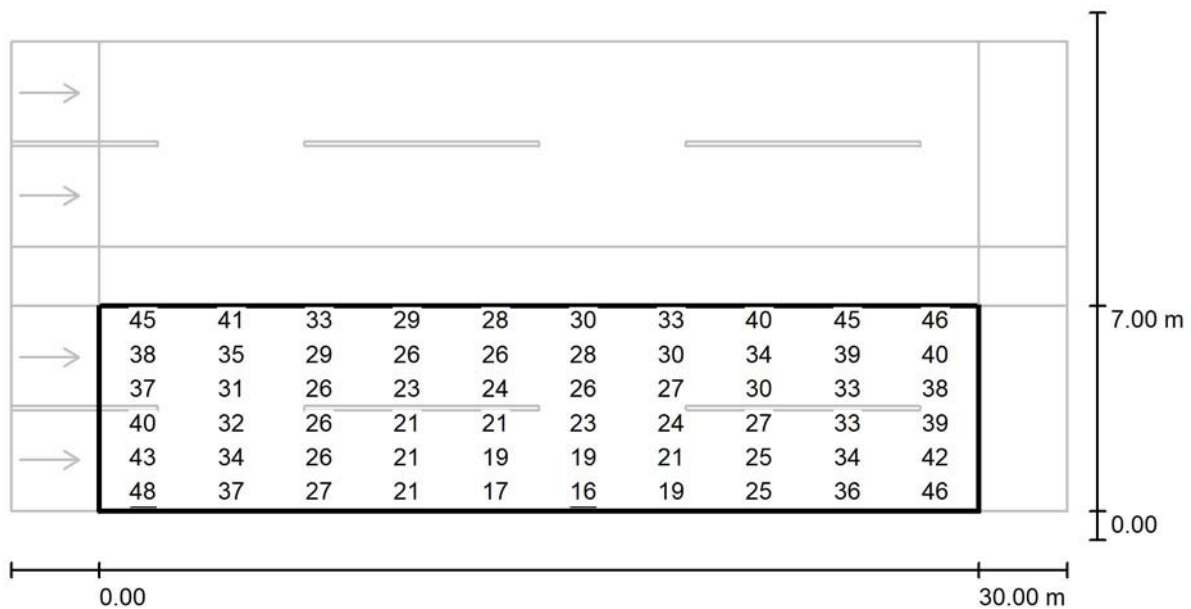
 E_{min} / E_{max}
 0.344

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Value Chart (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

 E_{av} [lx]
 31

 E_{min} [lx]
 16

 E_{max} [lx]
 48

 u_0
 0.530

 E_{min} / E_{max}
 0.344

GRUPPE LIGHTING SOLUTION SDN BHD

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Table (E)



6.417	45	41	33	29	28	30	33	40	45	46
5.250	38	35	29	26	26	28	30	34	39	40
4.083	37	31	26	23	24	26	27	30	33	38
2.917	40	32	26	21	21	23	24	27	33	39
1.750	43	34	26	21	19	19	21	25	34	42
0.583	<u>48</u>	37	27	21	17	<u>16</u>	19	25	36	46
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Lux.

Grid: 10 x 6 Points

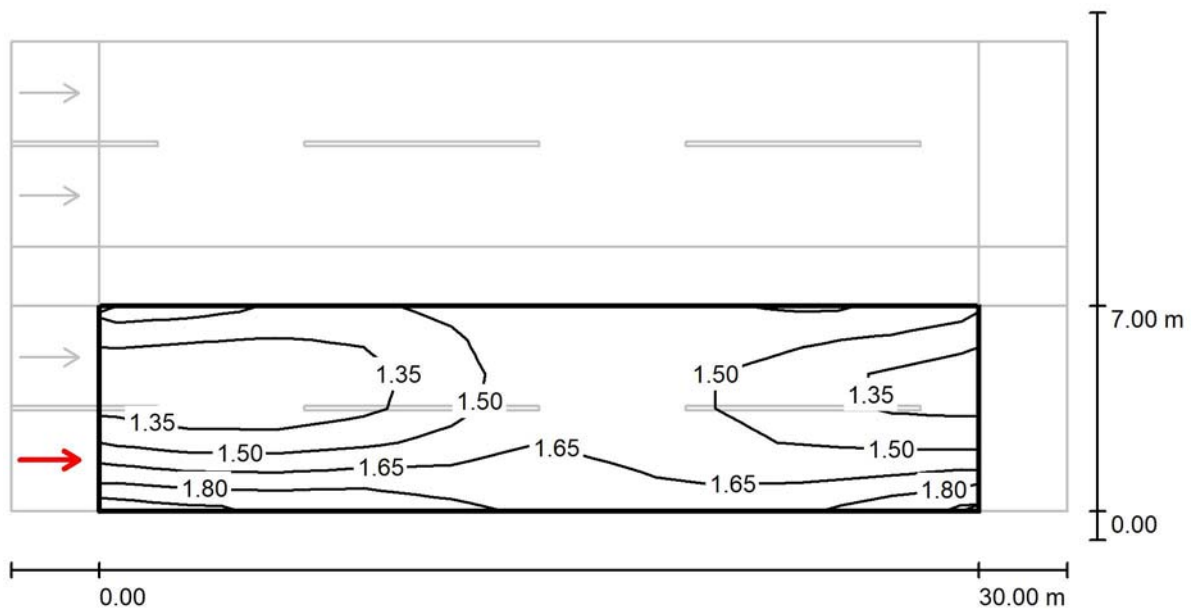
E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
31	16	48	0.530	0.344

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Observer 1 / Isolines (L)

Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 1.750 m, 1.500 m)

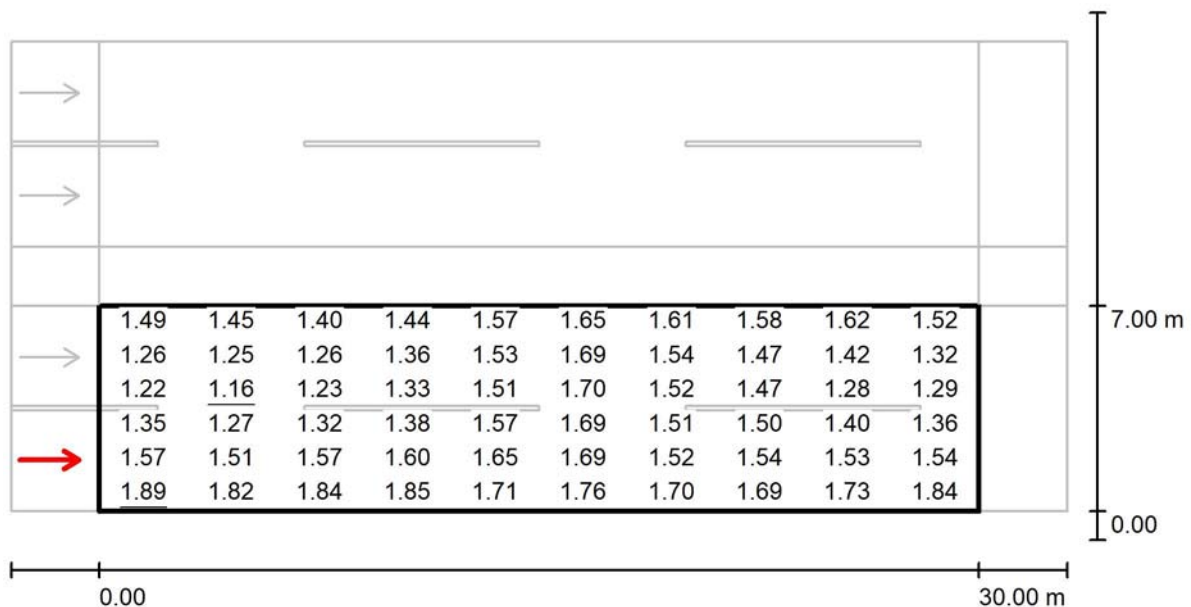
tarmac: R3, q0: 0.070

	L_{av} [cd/m ²]	U0	UI	TI [%]
Calculated values:	1.52	0.76	0.89	4
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Observer 1 / Value Chart (L)


Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 1.750 m, 1.500 m)

tarmac: R3, q0: 0.070

	L_{av} [cd/m²]	U0	UI	TI [%]
Calculated values:	1.52	0.76	0.89	4
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Observer 1 / Table (L)


6.417	1.49	1.45	1.40	1.44	1.57	1.65	1.61	1.58	1.62	1.52
5.250	1.26	1.25	1.26	1.36	1.53	1.69	1.54	1.47	1.42	1.32
4.083	1.22	1.16	1.23	1.33	1.51	1.70	1.52	1.47	1.28	1.29
2.917	1.35	1.27	1.32	1.38	1.57	1.69	1.51	1.50	1.40	1.36
1.750	1.57	1.51	1.57	1.60	1.65	1.69	1.52	1.54	1.53	1.54
0.583	1.89	1.82	1.84	1.85	1.71	1.76	1.70	1.69	1.73	1.84
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Candela/m².

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 1.750 m, 1.500 m)

tarmac: R3, q0: 0.070

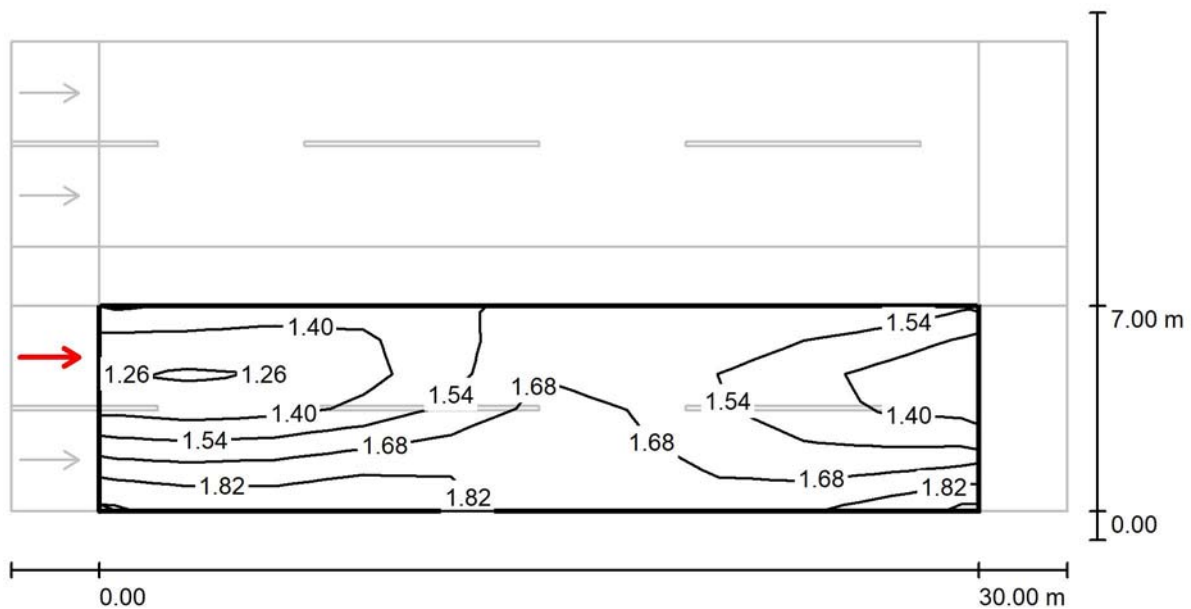
	L_{av} [cd/m ²]	U0	UI	TI [%]
Calculated values:	1.52	0.76	0.89	4
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Observer 2 / Isolines (L)

Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 5.250 m, 1.500 m)

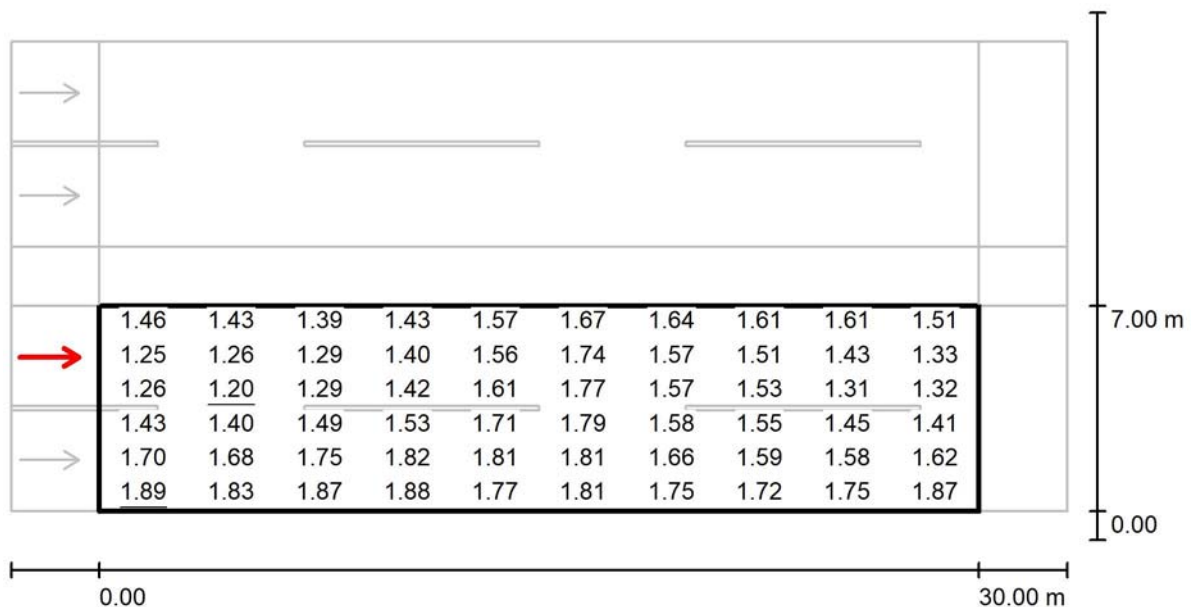
tarmac: R3, q0: 0.070

	L_{av} [cd/m ²]	U0	UI	TI [%]
Calculated values:	1.57	0.76	0.72	3
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

GRUPPE LIGHTING SOLUTION SDN BHD

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Observer 2 / Value Chart (L)


Values in Candela/m², Scale 1 : 258

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 5.250 m, 1.500 m)

tarmac: R3, q0: 0.070

	L_{av} [cd/m²]	U0	UI	TI [%]
Calculated values:	1.57	0.76	0.72	3
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 1 / Observer 2 / Table (L)


6.417	1.46	1.43	1.39	1.43	1.57	1.67	1.64	1.61	1.61	1.51
5.250	1.25	1.26	1.29	1.40	1.56	1.74	1.57	1.51	1.43	1.33
4.083	1.26	1.20	1.29	1.42	1.61	1.77	1.57	1.53	1.31	1.32
2.917	1.43	1.40	1.49	1.53	1.71	1.79	1.58	1.55	1.45	1.41
1.750	1.70	1.68	1.75	1.82	1.81	1.81	1.66	1.59	1.58	1.62
0.583	1.89	1.83	1.87	1.88	1.77	1.81	1.75	1.72	1.75	1.87
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Candela/m².

Grid: 10 x 6 Points

Observer Position: (-60.000 m, 5.250 m, 1.500 m)

tarmac: R3, q0: 0.070

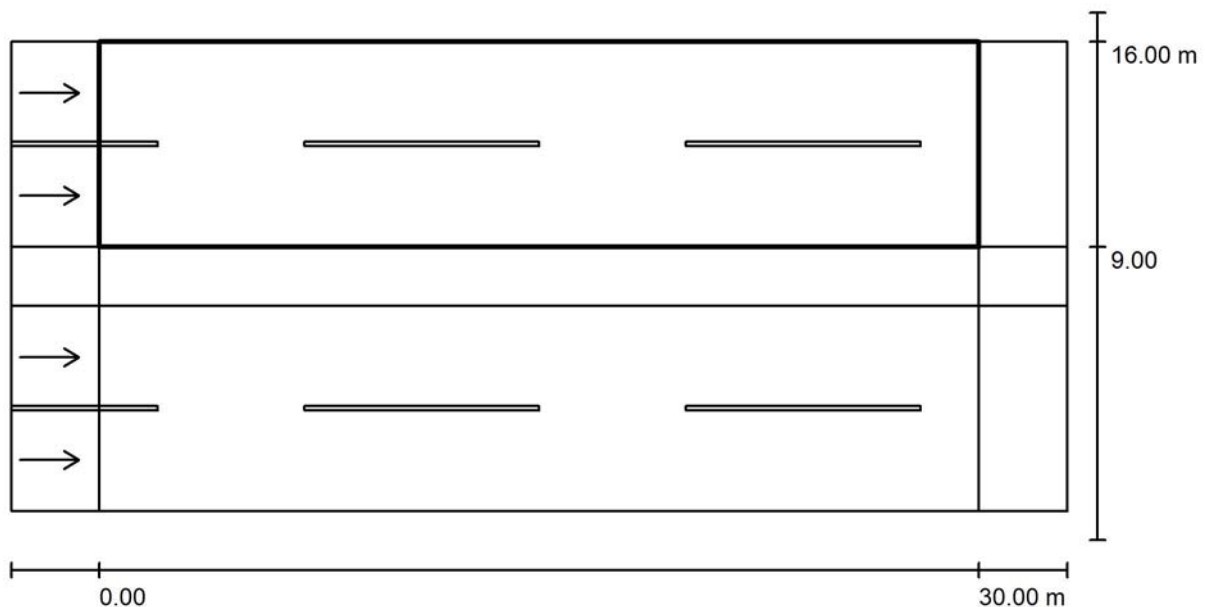
	L_{av} [cd/m ²]	U0	UI	TI [%]
Calculated values:	1.57	0.76	0.72	3
Required values according to class ME2:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10
Fulfilled/Not fulfilled:	✓	✓	✓	✓

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 2 / Results overview



Light loss factor: 0.80

Scale 1:258

Grid: 10 x 6 Points

Accompanying Street Elements: Roadway 2.

tarmac: R3, q0: 0.070

Selected Lighting Class: ME2

(All lighting performance requirements are met.)

	L_{av} [cd/m ²]	U0	UI	TI [%]	SR
Calculated values:	1.62	0.80	0.80	7	1.04
Required values according to class:	≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.50
Fulfilled/Not fulfilled:	✓	✓	✓	✓	✓

Assigned observer (2 Pieces):

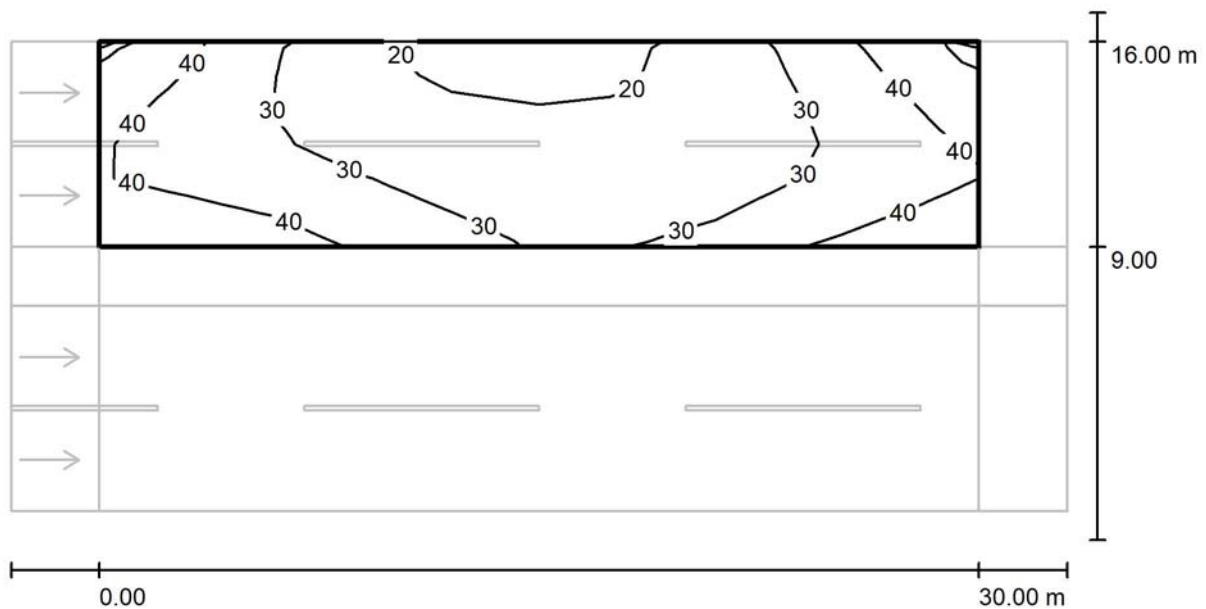
No.	Observer	Position [m]	L_{av} [cd/m ²]	U0	UI	TI [%]
1	Observer 3	(-60.000, 10.750, 1.500)	1.73	0.80	0.84	5
2	Observer 4	(-60.000, 14.250, 1.500)	1.62	0.80	0.80	7

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 e-Mail ashikin@gruppelighting.com

SINGLE SIDED (2 LANE) / Valuation Field Roadway 2 / Isolines (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

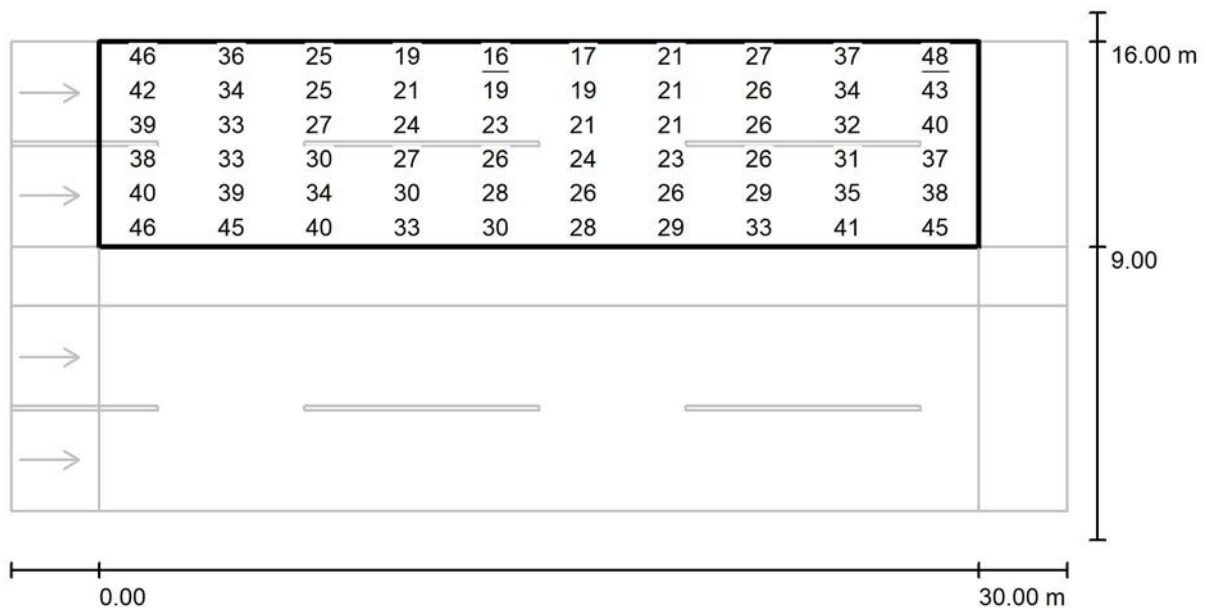
E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	$u0$	E_{min} / E_{max}
31	16	48	0.530	0.344

GRUPPE LIGHTING SOLUTION SDN BHD

 NO 9, JALAN ANGERIK MOKARA 31/60, KOTA KEMUNING,
 SEKSYEN 31,
 40460 SHAH ALAM, SELANGOR DARUL EHSAN

 Operator NURUL ASHIKIN BINTI MOHD RODZI
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SINGLE SIDED (2 LANE) / Valuation Field Roadway 2 / Value Chart (E)



Values in Lux, Scale 1 : 258

Grid: 10 x 6 Points

 E_{av} [lx]
 31

 E_{min} [lx]
 16

 E_{max} [lx]
 48

 u_0
 0.530

 E_{min} / E_{max}
 0.344

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SINGLE SIDED (2 LANE) / Valuation Field Roadway 2 / Table (E)



6.417	46	36	25	19	<u>16</u>	17	21	27	37	<u>48</u>
5.250	42	34	25	21	19	19	21	26	34	43
4.083	39	33	27	24	23	21	21	26	32	40
2.917	38	33	30	27	26	24	23	26	31	37
1.750	40	39	34	30	28	26	26	29	35	38
0.583	46	45	40	33	30	28	29	33	41	45
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500

Attention: The coordinates refer to the image above. Values in Lux.

Grid: 10 x 6 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
31	16	48	0.530	0.344