

DATE: 17 May 2017
DESIGNER: WB
PROJECT No: OP77656LD8601-A Green Pk, Ph6
PROJECT NAME: OP77656LD8601-A Green Pk, Ph6



The undercroft car park has been designed to BS EN 12464-1:2011 table 5.34. Indoor Car Parks. 75lux average illuminance 40% overall uniformity.

The outdoor car park has been designed to BS5489-1:2013 Table 5. Outdoor Car Parks. High Traffic. 20lux Average Illuminance and 25% Overall Uniformity.

The maintenance factor has been calculated to BS5489-1:2013, Table B1. Luminaire Maintenance Factors

-Mounting height - 6m

-Cleaning frequency - 72 months Environmental zone – E3/E4: 0.84

-percentage of initial light output (Lx) for 100,000hours: 90%

-LED rated life 100,000hours (Fy): no failures

From this information MF = 0.76

Outdoor Lighting Report

This design has been prepared in accordance with the HEA/HEMSA Guidance Note - CDM2015 Regulations, Issue 1.1 dated 09/04/15 - Procedure 2 for an outline design. The information in this report does not account for installation considerations, site conditions or provide any form of risk assessment. Urbis' design service is advisory only and it is the responsibility of the recipient of this information to verify that the design is suitable for the intended application. No account is taken for the blocking effect caused by buildings, trees etc. The calculation shown assumes that the whole area considered is in the same plane.

PREPARED BY: Urbis Schreder Limited
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Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

No.	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Outdoor Car Park	469512.00	170165.00	249.00	241.00	1.50	1.50
2	Undercroft Car Park	469558.00	170237.00	147.00	120.00	1.50	1.50

Luminaires

Luminaire A Data

Supplier	Urbis
Type	AXIA 2.1 5167 - 24 Nichia NVSL219CT 890 mA NW 230V Integrated
Lamp(s)	24 Nichia NVSL219CT
Lamp Flux (klm)	7.85
File Name	AXIA 2.1 5167 24 Nichia NVSL219CT 890mA NW 383402 Integrated lenses - 230V 25...
Maintenance Factor	0.76
Imax70,80,90(cd/klm)	922.5, 166.6, 0.0
No. in Project	10

Luminaire B Data

Supplier	Urbis
Type	DUSTPROOF LED IP65 SURFACE
Lamp(s)	LED PANELS
LampFlux(klm)/Colour	5.80 4590K/1B
File Name	DP66-6T-CO-840.LDT
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	108.3, 65.5, 33.0
No. in Project	158

Layout

No.	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	469701.84	170280.92	6.00	97.00	0.00	0.00	0.75			
2	A	469699.96	170297.92	6.00	193.00	0.00	0.00	0.75			
3	A	469680.75	170293.37	6.00	291.00	0.00	0.00	0.75			
4	A	469670.82	170270.42	6.00	123.00	0.00	0.00	0.75			
5	A	469649.38	170275.61	6.00	311.00	0.00	0.00	0.75			
6	A	469648.18	170250.31	6.00	147.00	0.00	0.00	0.75			
7	A	469628.14	170250.04	6.00	331.00	0.00	0.00	0.75			
8	A	469631.80	170228.87	6.00	157.00	0.00	0.00	0.75			
9	A	469614.22	170219.68	6.00	314.00	0.00	0.00	0.75			
10	B	469598.24	170254.11	4.00	141.00	0.00	0.00	0.00			
11	B	469602.91	170249.40	4.00	141.00	0.00	0.00	0.00			
12	A	469608.51	170244.01	6.00	70.00	0.00	0.00	0.75			
13	B	469592.09	170252.03	4.00	141.00	0.00	0.00	0.00			
14	B	469613.67	170283.83	4.00	50.00	0.00	0.00	0.00			
15	B	469608.91	170278.35	4.00	50.00	0.00	0.00	0.00			
16	B	469604.00	170272.58	4.00	50.00	0.00	0.00	0.00			
17	B	469598.95	170267.10	4.00	50.00	0.00	0.00	0.00			
18	B	469594.04	170261.33	4.00	50.00	0.00	0.00	0.00			
19	B	469618.35	170290.22	4.00	50.00	0.00	0.00	0.00			

Layout Continued

No.	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
20	B	469581.79	170272.06	4.00	50.00	0.00	0.00	0.00			
21	B	469586.66	170277.75	4.00	50.00	0.00	0.00	0.00			
22	B	469591.56	170283.36	4.00	50.00	0.00	0.00	0.00			
23	B	469596.55	170289.15	4.00	50.00	0.00	0.00	0.00			
24	B	469601.46	170294.67	4.00	50.00	0.00	0.00	0.00			
25	B	469606.67	170300.22	4.00	50.00	0.00	0.00	0.00			
26	B	469569.75	170282.72	4.00	50.00	0.00	0.00	0.00			
27	B	469574.44	170288.52	4.00	50.00	0.00	0.00	0.00			
28	B	469579.71	170294.04	4.00	50.00	0.00	0.00	0.00			
29	B	469584.65	170299.41	4.00	50.00	0.00	0.00	0.00			
30	B	469589.53	170305.11	4.00	50.00	0.00	0.00	0.00			
31	B	469594.41	170310.91	4.00	50.00	0.00	0.00	0.00			
32	B	469622.90	170295.63	4.00	50.00	0.00	0.00	0.00			
33	B	469628.02	170301.29	4.00	50.00	0.00	0.00	0.00			
34	B	469632.52	170306.42	4.00	50.00	0.00	0.00	0.00			
35	B	469611.39	170305.98	4.00	50.00	0.00	0.00	0.00			
36	B	469615.98	170311.49	4.00	50.00	0.00	0.00	0.00			
37	B	469621.01	170317.44	4.00	50.00	0.00	0.00	0.00			
38	B	469599.39	170316.52	4.00	50.00	0.00	0.00	0.00			
39	B	469604.09	170322.23	4.00	50.00	0.00	0.00	0.00			
40	B	469608.97	170327.94	4.00	50.00	0.00	0.00	0.00			
41	B	469638.94	170309.85	4.00	23.00	0.00	0.00	0.00			
42	B	469645.78	170312.59	4.00	23.00	0.00	0.00	0.00			
43	B	469652.78	170315.84	4.00	23.00	0.00	0.00	0.00			
44	B	469659.49	170318.90	4.00	23.00	0.00	0.00	0.00			
45	B	469666.18	170322.18	4.00	23.00	0.00	0.00	0.00			
46	B	469673.14	170325.08	4.00	23.00	0.00	0.00	0.00			
47	B	469679.89	170328.39	4.00	23.00	0.00	0.00	0.00			
48	B	469686.63	170331.64	4.00	23.00	0.00	0.00	0.00			
49	B	469632.55	170323.74	4.00	23.00	0.00	0.00	0.00			
50	B	469626.61	170321.03	4.00	23.00	0.00	0.00	0.00			
51	B	469639.30	170327.06	4.00	23.00	0.00	0.00	0.00			
52	B	469645.98	170330.32	4.00	23.00	0.00	0.00	0.00			
53	B	469652.90	170333.13	4.00	23.00	0.00	0.00	0.00			
54	B	469659.65	170336.33	4.00	23.00	0.00	0.00	0.00			
55	B	469666.53	170339.26	4.00	23.00	0.00	0.00	0.00			

Layout Continued

No.	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
56	B	469673.54	170341.97	4.00	23.00	0.00	0.00	0.00			
57	B	469680.78	170344.93	4.00	23.00	0.00	0.00	0.00			
58	B	469666.38	170304.16	4.00	23.00	0.00	0.00	0.00			
59	B	469672.96	170307.69	4.00	23.00	0.00	0.00	0.00			
60	B	469679.83	170310.66	4.00	23.00	0.00	0.00	0.00			
61	B	469686.54	170313.75	4.00	23.00	0.00	0.00	0.00			
62	B	469693.29	170316.29	4.00	23.00	0.00	0.00	0.00			
63	B	469691.05	170304.47	4.00	98.00	0.00	0.00	0.00			
64	B	469610.74	170256.71	4.00	50.00	0.00	0.00	0.00			
65	B	469615.76	170262.29	4.00	50.00	0.00	0.00	0.00			
66	B	469620.59	170268.27	4.00	50.00	0.00	0.00	0.00			
67	B	469625.15	170273.84	4.00	50.00	0.00	0.00	0.00			
68	B	469605.47	170251.33	4.00	50.00	0.00	0.00	0.00			
69	B	469587.17	170255.96	4.00	140.00	0.00	0.00	0.00			
70	B	469581.51	170260.93	4.00	134.00	0.00	0.00	0.00			
71	B	469575.74	170265.86	4.00	138.00	0.00	0.00	0.00			
72	B	469570.31	170270.49	4.00	137.00	0.00	0.00	0.00			
73	B	469613.53	170331.36	4.00	12.00	0.00	0.00	0.00			
74	B	469620.88	170332.92	4.00	12.00	0.00	0.00	0.00			
75	B	469628.25	170334.29	4.00	12.00	0.00	0.00	0.00			
76	B	469635.53	170335.75	4.00	12.00	0.00	0.00	0.00			
77	B	469642.94	170337.24	4.00	12.00	0.00	0.00	0.00			
78	B	469650.22	170338.71	4.00	12.00	0.00	0.00	0.00			
79	B	469578.41	170280.07	4.00	50.00	0.00	0.00	0.00			
80	B	469583.38	170285.72	4.00	49.00	0.00	0.00	0.00			
81	B	469588.27	170291.33	4.00	49.00	0.00	0.00	0.00			
82	B	469593.49	170297.30	4.00	46.00	0.00	0.00	0.00			
83	B	469598.13	170302.68	4.00	51.00	0.00	0.00	0.00			
84	B	469590.45	170269.48	4.00	47.00	0.00	0.00	0.00			
85	B	469595.46	170275.22	4.00	47.00	0.00	0.00	0.00			
86	B	469600.33	170280.85	4.00	47.00	0.00	0.00	0.00			
87	B	469603.15	170308.42	4.00	47.00	0.00	0.00	0.00			
88	B	469605.23	170286.48	4.00	47.00	0.00	0.00	0.00			
89	B	469610.26	170292.22	4.00	47.00	0.00	0.00	0.00			
90	B	469615.09	170297.80	4.00	47.00	0.00	0.00	0.00			
91	B	469602.50	170259.01	4.00	47.00	0.00	0.00	0.00			

Layout Continued

No.	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
92	B	469607.56	170264.79	4.00	47.00	0.00	0.00	0.00			
93	B	469612.37	170270.32	4.00	47.00	0.00	0.00	0.00			
94	B	469617.34	170276.05	4.00	47.00	0.00	0.00	0.00			
95	B	469622.02	170281.84	4.00	47.00	0.00	0.00	0.00			
96	B	469627.04	170287.48	4.00	47.00	0.00	0.00	0.00			
97	B	469631.89	170293.17	4.00	47.00	0.00	0.00	0.00			
98	B	469619.29	170254.38	4.00	47.00	0.00	0.00	0.00			
99	B	469624.23	170260.14	4.00	47.00	0.00	0.00	0.00			
100	B	469629.21	170265.76	4.00	47.00	0.00	0.00	0.00			
101	B	469620.05	170303.55	4.00	47.00	0.00	0.00	0.00			
102	B	469624.90	170309.15	4.00	47.00	0.00	0.00	0.00			
103	B	469608.00	170314.00	4.00	47.00	0.00	0.00	0.00			
104	B	469612.87	170319.68	4.00	47.00	0.00	0.00	0.00			
105	B	469617.35	170324.70	4.00	47.00	0.00	0.00	0.00			
106	B	469632.54	170314.83	4.00	27.00	0.00	0.00	0.00			
107	B	469639.32	170317.98	4.00	27.00	0.00	0.00	0.00			
108	B	469646.07	170321.10	4.00	27.00	0.00	0.00	0.00			
109	B	469652.89	170324.33	4.00	27.00	0.00	0.00	0.00			
110	B	469659.79	170327.55	4.00	27.00	0.00	0.00	0.00			
111	B	469666.52	170330.65	4.00	27.00	0.00	0.00	0.00			
112	B	469673.32	170333.83	4.00	27.00	0.00	0.00	0.00			
113	B	469679.97	170336.95	4.00	27.00	0.00	0.00	0.00			
114	B	469686.79	170340.13	4.00	27.00	0.00	0.00	0.00			
115	B	469666.40	170312.98	4.00	27.00	0.00	0.00	0.00			
116	B	469673.25	170316.14	4.00	27.00	0.00	0.00	0.00			
117	B	469680.11	170319.35	4.00	27.00	0.00	0.00	0.00			
118	B	469686.83	170322.47	4.00	27.00	0.00	0.00	0.00			
119	B	469673.20	170298.69	4.00	27.00	0.00	0.00	0.00			
120	B	469679.94	170301.95	4.00	27.00	0.00	0.00	0.00			
121	B	469686.65	170305.04	4.00	27.00	0.00	0.00	0.00			
122	B	469695.10	170344.37	4.00	266.00	0.00	0.00	0.00			
123	B	469695.38	170336.28	4.00	266.00	0.00	0.00	0.00			
124	B	469696.06	170327.16	4.00	266.00	0.00	0.00	0.00			
125	B	469696.24	170317.84	4.00	266.00	0.00	0.00	0.00			
126	B	469696.41	170309.34	4.00	266.00	0.00	0.00	0.00			
127	B	469696.75	170301.90	4.00	267.00	0.00	0.00	0.00			

Layout Continued

No.	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
128	B	469688.56	170348.09	4.00	18.00	0.00	0.00	0.00			
129	B	469701.09	170338.25	4.00	266.00	0.00	0.00	0.00			
130	B	469701.29	170330.90	4.00	266.00	0.00	0.00	0.00			
131	B	469701.93	170323.33	4.00	266.00	0.00	0.00	0.00			
132	B	469700.92	170346.32	4.00	266.00	0.00	0.00	0.00			
133	B	469687.32	170353.14	4.00	11.00	0.00	0.00	0.00			
134	B	469657.49	170346.93	4.00	14.00	0.00	0.00	0.00			
135	B	469664.79	170348.48	4.00	14.00	0.00	0.00	0.00			
136	B	469672.15	170350.06	4.00	14.00	0.00	0.00	0.00			
137	B	469679.41	170351.60	4.00	14.00	0.00	0.00	0.00			
138	B	469650.02	170345.36	4.00	14.00	0.00	0.00	0.00			
139	B	469642.69	170343.88	4.00	14.00	0.00	0.00	0.00			
140	B	469635.40	170342.31	4.00	14.00	0.00	0.00	0.00			
141	B	469628.18	170340.69	4.00	14.00	0.00	0.00	0.00			
142	B	469620.67	170339.25	4.00	14.00	0.00	0.00	0.00			
143	B	469613.43	170337.84	4.00	13.00	0.00	0.00	0.00			
144	B	469603.66	170331.14	4.00	51.00	0.00	0.00	0.00			
145	B	469598.72	170325.44	4.00	49.00	0.00	0.00	0.00			
146	B	469593.88	170319.77	4.00	49.00	0.00	0.00	0.00			
147	B	469588.79	170314.25	4.00	49.00	0.00	0.00	0.00			
148	B	469583.97	170308.49	4.00	49.00	0.00	0.00	0.00			
149	B	469577.95	170301.50	4.00	49.00	0.00	0.00	0.00			
150	B	469572.54	170295.27	4.00	49.00	0.00	0.00	0.00			
151	B	469567.79	170289.52	4.00	49.00	0.00	0.00	0.00			
152	B	469564.83	170281.53	4.00	71.00	0.00	0.00	0.00			
153	B	469635.87	170297.85	4.00	49.00	0.00	0.00	0.00			
154	B	469645.96	170303.77	4.00	27.00	0.00	0.00	0.00			
155	B	469652.70	170307.09	4.00	28.00	0.00	0.00	0.00			
156	B	469659.56	170310.30	4.00	24.00	0.00	0.00	0.00			
157	B	469694.03	170354.63	4.00	8.00	0.00	0.00	0.00			
158	B	469592.12	170258.70	4.00	141.00	0.00	0.00	0.00			
159	B	469586.11	170264.46	4.00	141.00	0.00	0.00	0.00			
160	B	469579.54	170269.02	4.00	141.00	0.00	0.00	0.00			
161	B	469573.94	170275.18	4.00	141.00	0.00	0.00	0.00			
162	B	469640.29	170301.24	4.00	27.00	0.00	0.00	0.00			
163	B	469623.24	170327.66	4.00	14.00	0.00	0.00	0.00			

Layout Continued

No.	Type	X	Y	Height	Angle	Tilt	Cant	Out- reach	Target X	Target Y	Target Z
164	B	469632.96	170329.94	4.00	16.00	0.00	0.00	0.00			
165	B	469699.37	170354.88	4.00	1.00	0.00	0.00	0.00			
166	B	469608.78	170336.26	4.00	34.00	0.00	0.00	0.00			
167	B	469568.66	170278.99	4.00	141.00	0.00	0.00	0.00			
168	B	469695.07	170349.99	4.00	268.00	0.00	0.00	0.00			

Horizontal Illuminance (lux)

Outdoor Car Park

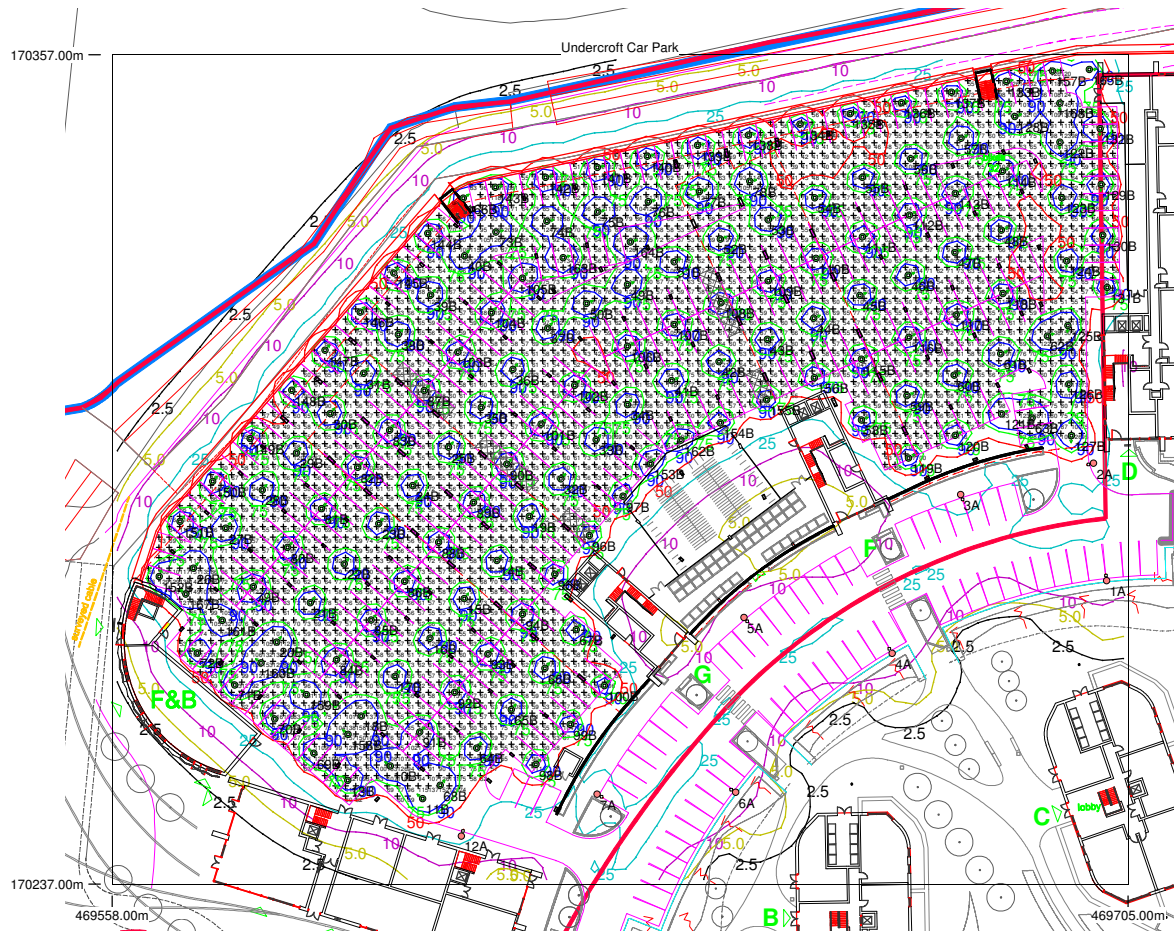


Results

Eav	21.02
Emin	5.19
Emax	148.02
Emin/Emax	0.04
Emin/Eav	0.25

Horizontal Illuminance (lux)

Undercroft Car Park



Results

Eav	75.00
Emin	36.49
Emax	157.80
Emin/Emax	0.23
Emin/Eav	0.49