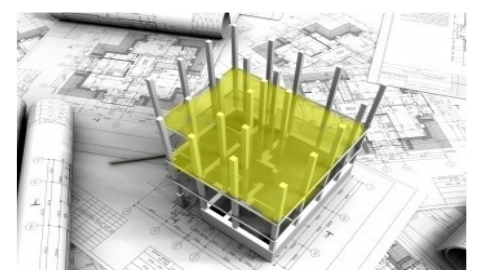
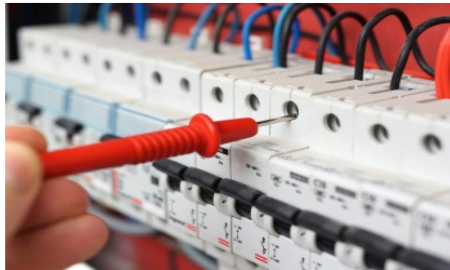


External Lighting – Adair St Hotel



A&B Engineering ESD
9-17 Derby Lane
Liverpool, L13 6QA
0151 228 4661
cevans@abeng.co.uk

Adair St Hotel

Proposal for External Lighting

The Spike Light can tilt left, right up or down, therefore it can be installed aimed in any direction, this is in fact the main purpose of using a multi directional spotlight, to have complete flexibility. It also means that we have no control on the precise installed orientation and aim of the fitting, we will simply aim the fittings at whatever feature is close by i.e. planters.

We assume the architect will attend site after installation is complete and request the re-aiming of selected spotlights to highlight structures or feature planting. This is not something which can be calculated and co-ordinated with specific aiming instructions, the final solution is flexible and can be adjusted & moulded to the architects wishes.

As stated above, the purpose of the spikelight is to highlight and illuminate the features and plants to be installed on the façade of the building & therefore none of them should be aimed directly at adjoining buildings. However, in the unlikely event that a single spot light is causing an issue, it's a simple task to loosen an Allen screw and re-direct it away from the direction which is causing a problem. The spike light will also be installed with a larger spike to avoid unwanted movement when installed in their final position.

In terms of light levels, this again does not apply to the façade lighting, what is being created on the façade is feature lighting, highlights and lowlights to create interest and a visually appealing appearance when viewed from a distance. The architects image within their own Landscape Plan, whilst set against a daylight background, does show a good representation of what the façade is going to look like when installed, see below



Proposed Fitting:
Knightsbridge
Spike Light GU10 LED
With extended spike

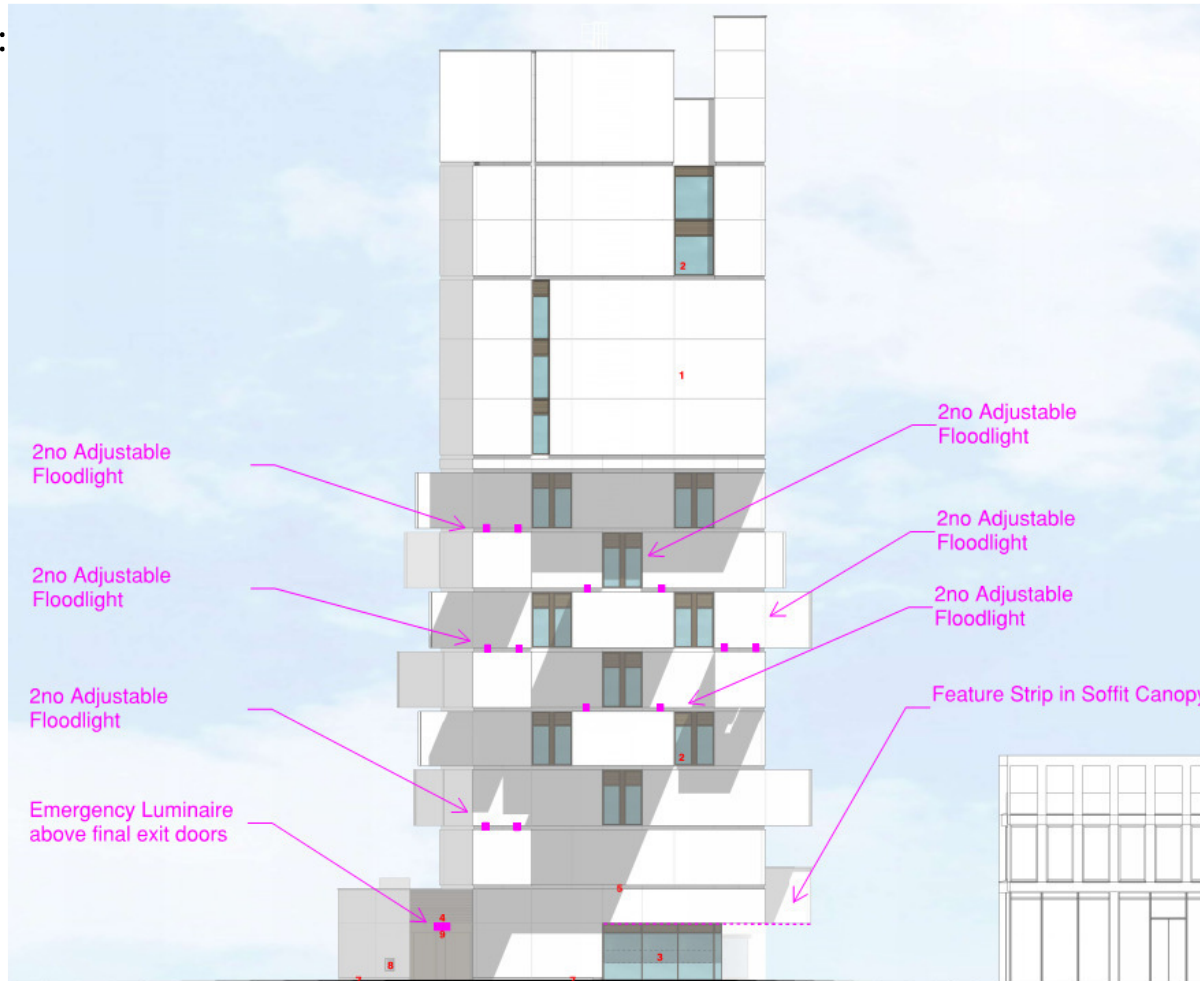


ADDITIONAL ACCESSORIES

Code	Finish	Spike length
EXT2	Stainless Steel	600mm
EXT3	Black	604mm

Adair St Hotel Proposal for External Lighting

Elevation North East:



Adair St Hotel Proposal for External Lighting

Elevation South East:



Adair St Hotel Proposal for External Lighting

Elevation South West:



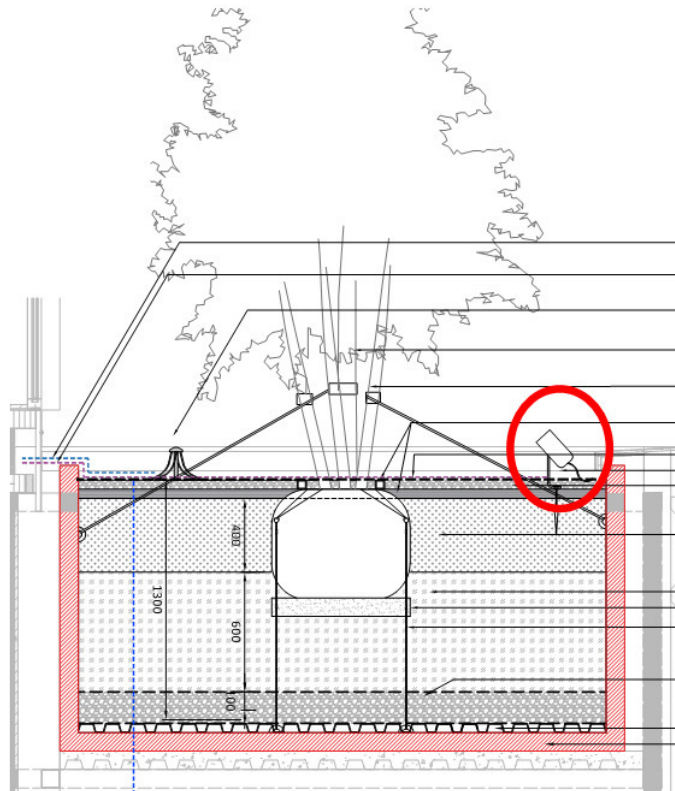
Adair St Hotel Proposal for External Lighting

Elevation North West:



Adair St Hotel Proposal for External Lighting

Architects Concept:



Adair St Hotel Proposal for External Lighting



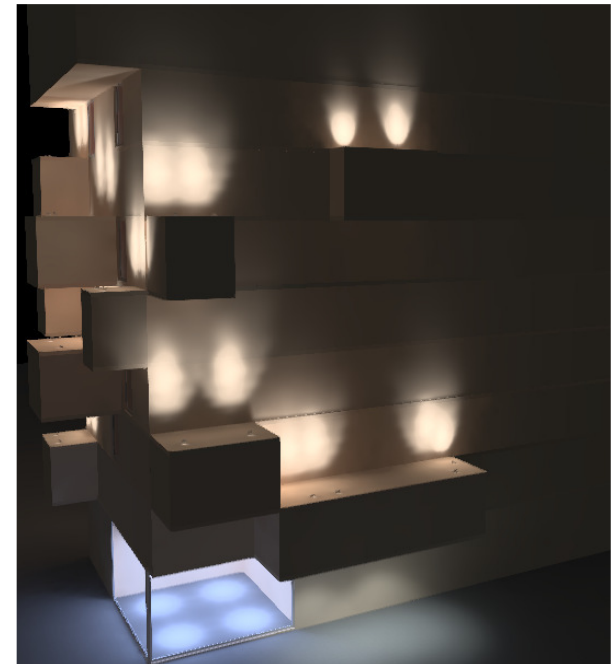
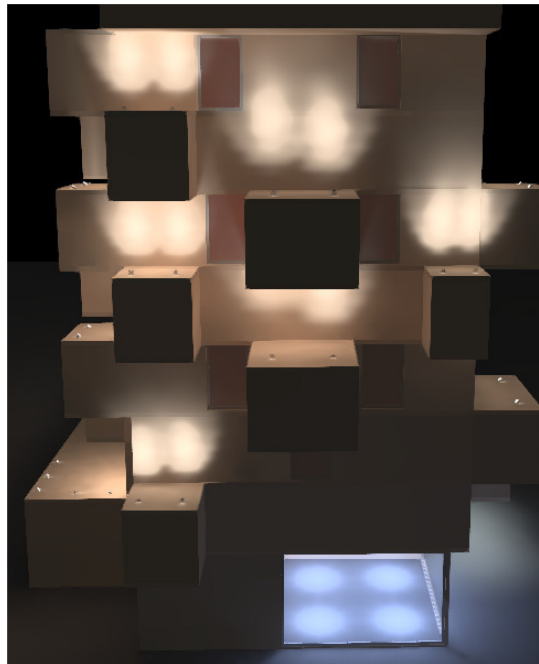
For Visual Use Only of Typical Planter:



Adair St Hotel Proposal for External Lighting



For Visual Use Only of Building Planters:



Adair St Hotel

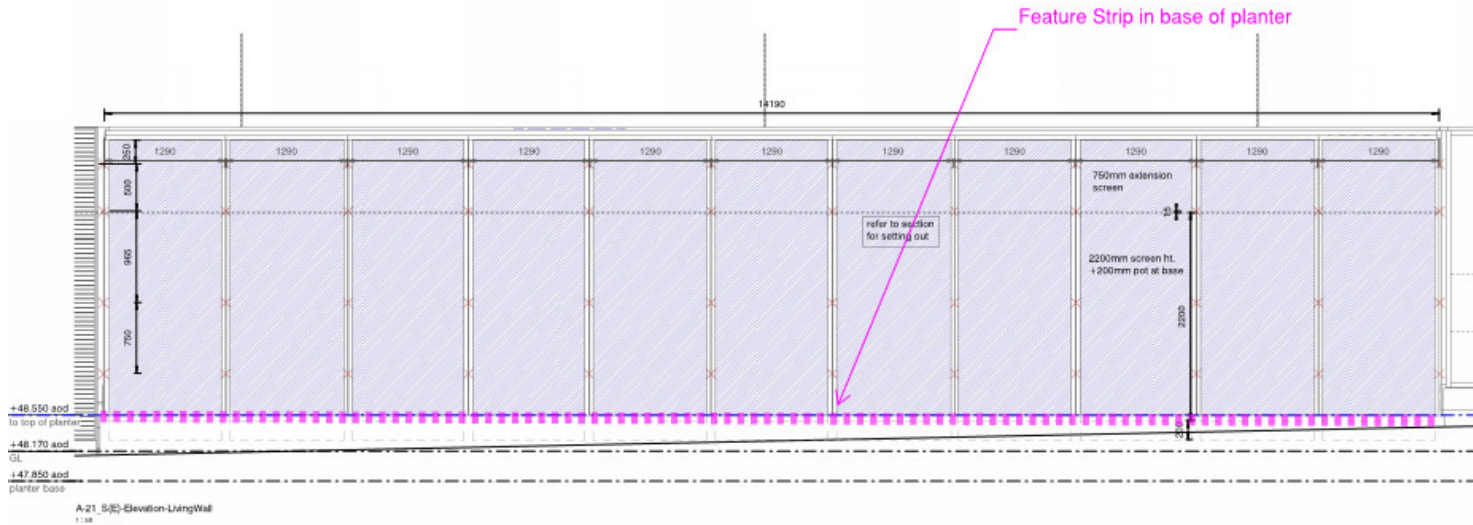
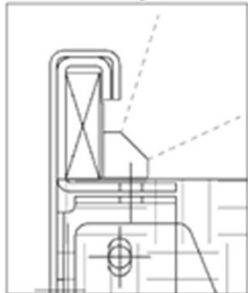
Proposal for External Lighting

IP rated LED extrusion housing tape is proposed for the green wall.

Detail and images of product below:



aluminium corner
diffuser housing LED
tape mounted to
internal wall of
planter - indicative
detail TBC by M+E

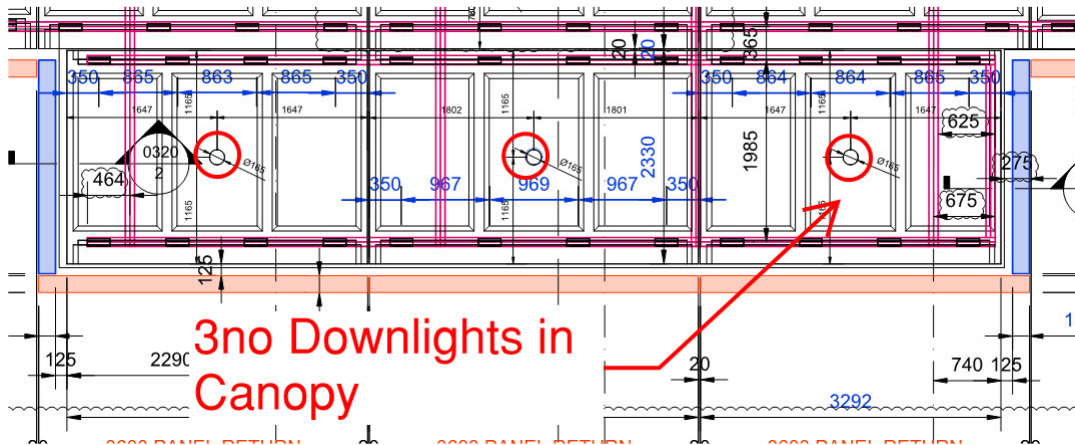
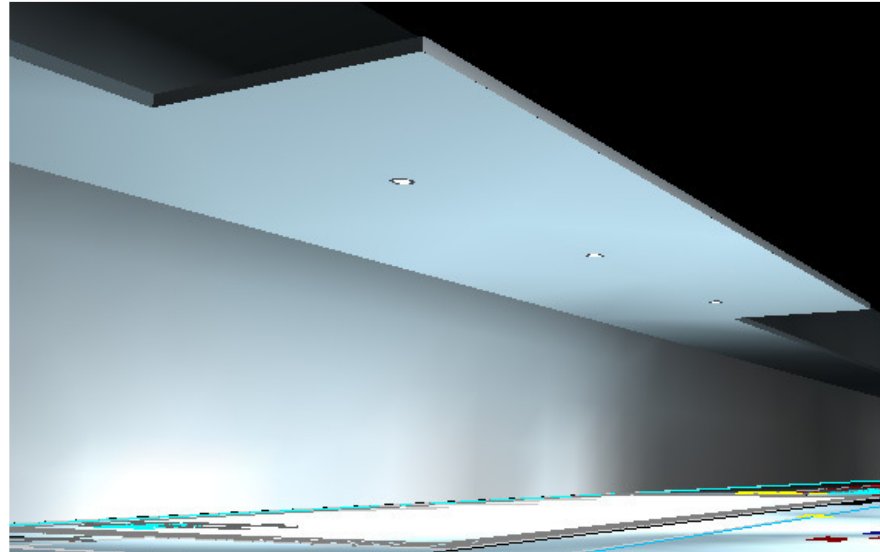


Adair St Hotel Proposal for External Lighting

Canopy to have 3no downlighters for the entrance area.

Please see supporting calculations for this proposal.

For Visual Use Only of Canopy:



abengineering

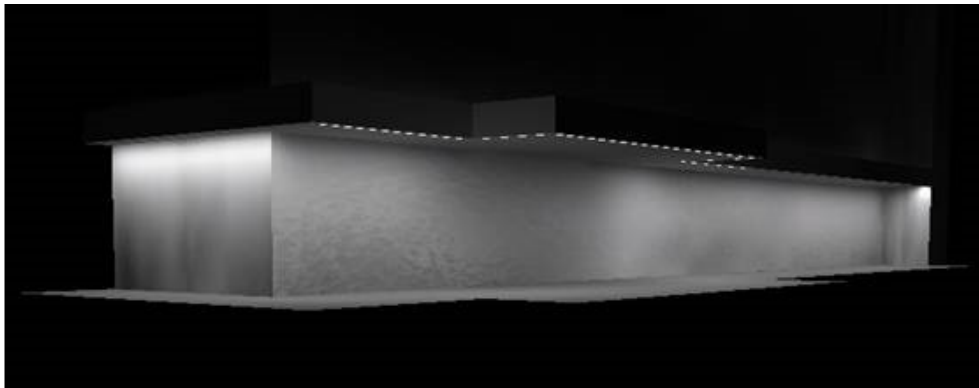
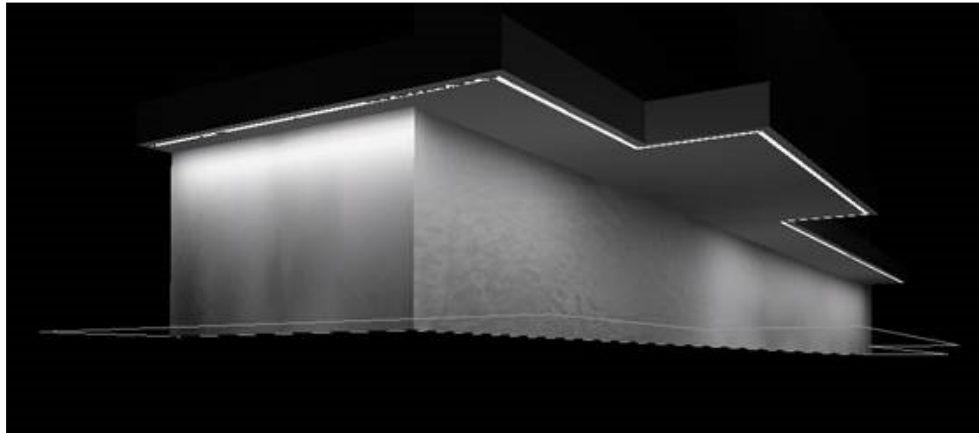
Proposed Fitting:
Whitecroft
Mirage 3 C165 IP65



Adair St Hotel Proposal for External Lighting

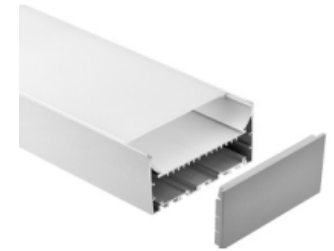
Canopy to also have feature led strip within an aluminium channel to follow the edge.

Please see supporting calculations for this proposal.



abengineering

Proposed Fitting:
One Electric

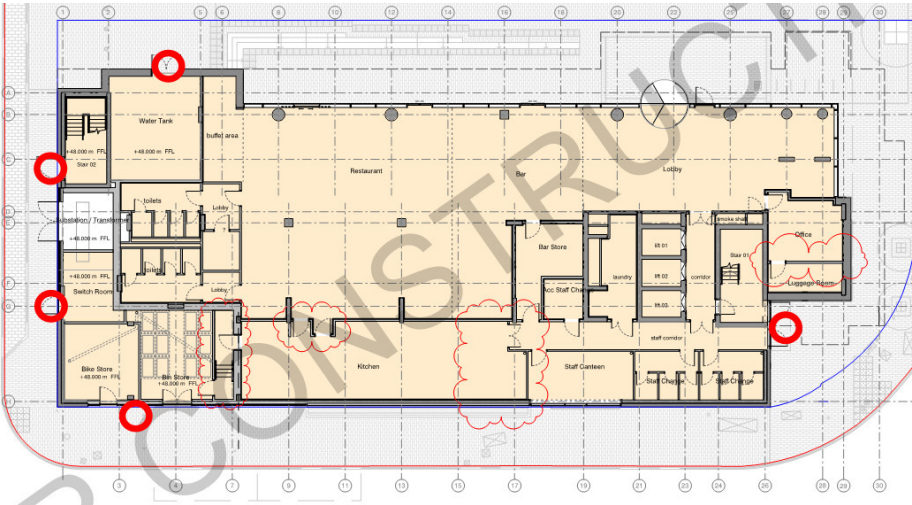


**BOWMER
KIRKLAND**

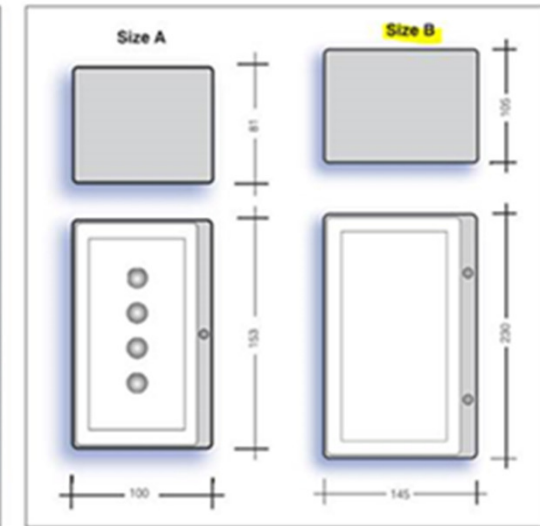
Adair St Hotel Proposal for External Lighting

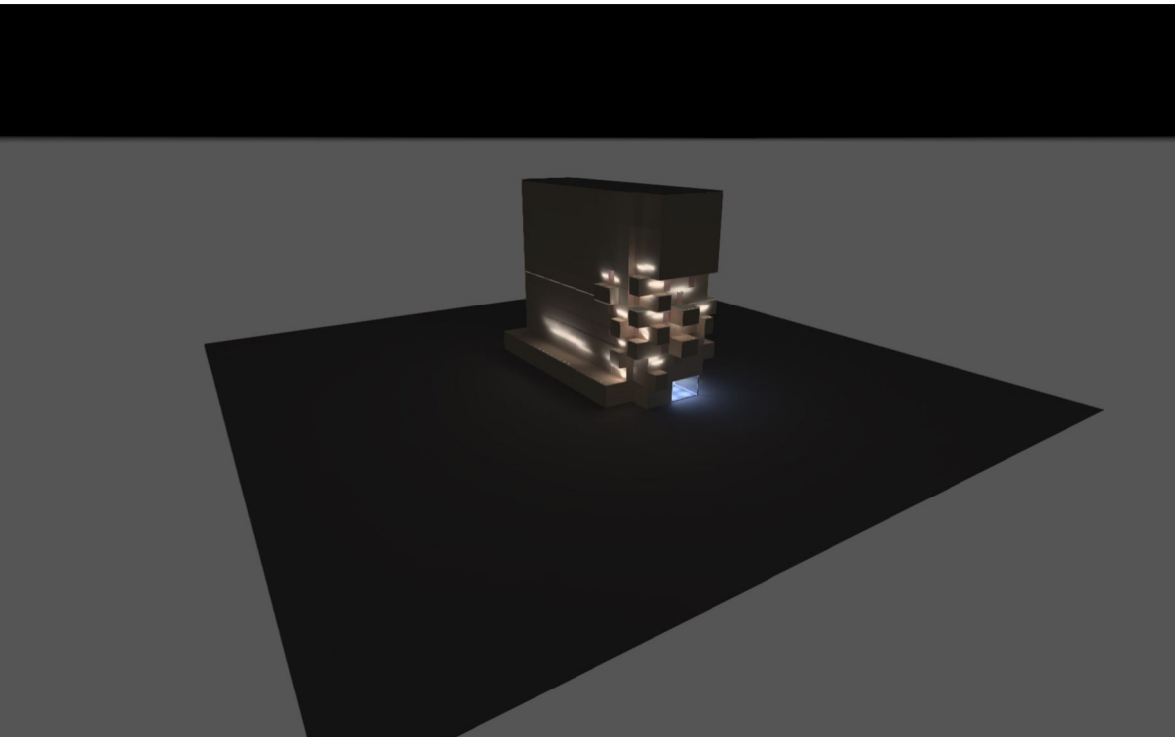
Bespoke Box Emergency Bulkhead fittings above all final exit doors.

As shown on the Elevations



Proposed Fitting:
Boxster – BOX-1470-4-D





Adair Hotel Rev B

Planning Calculation

Preliminary remarks

Notes on planning:

The energy consumption quantities do not take into account light scenes and their dimming levels.

Content

Cover page	1
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Luminaire list	5

Product data sheets

Platek s.r.l. - TARGET Small 4 LED (10W - 3000K) Elliptical 220-240V 0/50/60Hz (1x LED)	6
---	---

Site 1

Calculation surface window 1 / Perpendicular illuminance	7
Calculation surface window 4 / Perpendicular illuminance	8

Site 1

Building 2

Calculation surface window 3 / Perpendicular illuminance	9
Calculation surface section 4 / Perpendicular illuminance	10

Site 1 - Building 2

Level 5

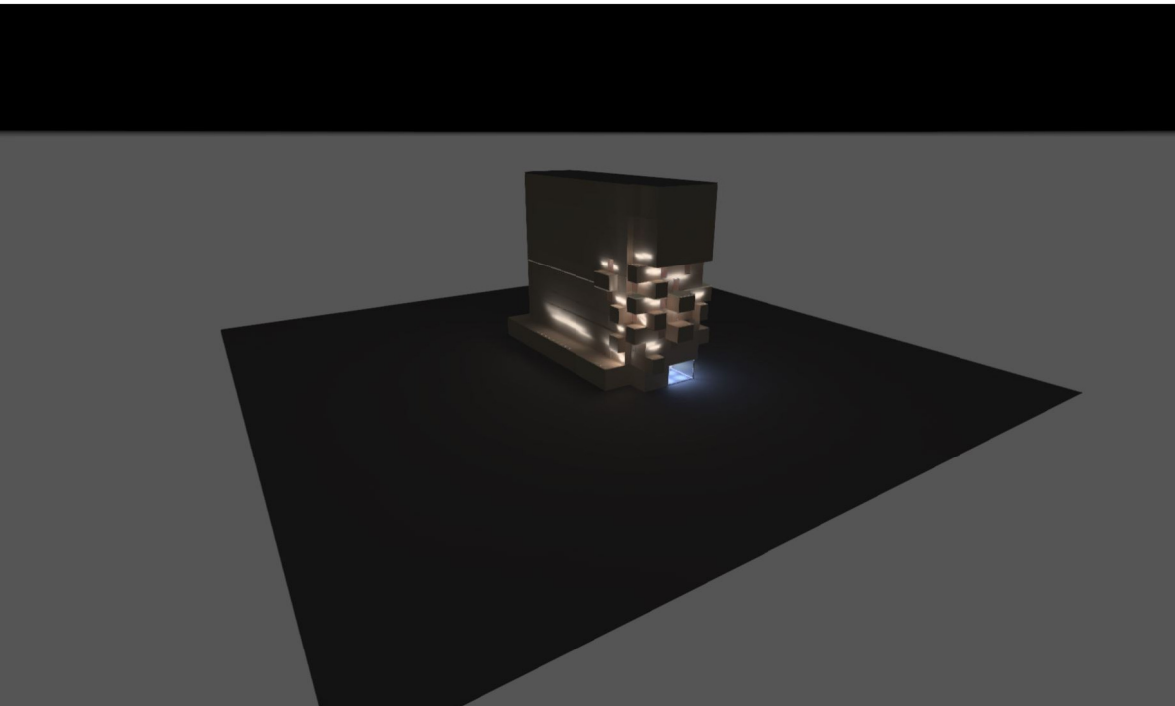
Surface result object 2 (Wall) / Perpendicular illuminance (adaptive)	11
Surface result object 2 (Wall) / Luminance	12
Surface result object 3 (Wall) / Perpendicular illuminance (adaptive)	13
Surface result object 3 (Wall) / Luminance	14
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Site 1 - Building 2

Level 6

Surface result object 6 (Wall) / Perpendicular illuminance (adaptive)	17
Surface result object 6 (Wall) / Luminance	18

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Description

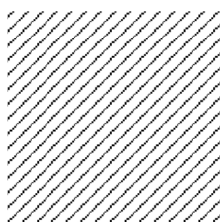
Luminaire list

Φ_{total} 53783 lm	P_{total} 550.0 W	Luminous efficacy 97.8 lm/W
-----------------------------------	-------------------------------	--------------------------------

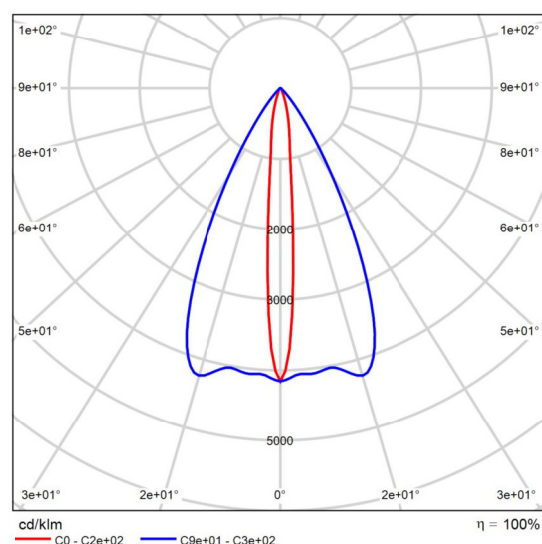
pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
49	Platek s.r.l.	8820117	TARGET Small 4 LED (10W - 3000K) Elliptical 220-240V 0/50/60Hz	6.0 W	460 lm	76.7 lm/W
5	Platek s.r.l.	8820117	TARGET Small 4 LED (10W - 3000K) Elliptical 220-240V 0/50/60Hz	6.0 W	501 lm	83.4 lm/W
2	WHITECROFT	M6Y13K	MIRAGE LED IP65	21.0 W	2267 lm	108.0 lm/W
4	WHITECROFT	OPSY34K W	OCULUS	46.0 W	5952 lm	129.4 lm/W

Product data sheet

Platek s.r.l. TARGET Small 4 LED (10W - 3000K) Elliptical 220-240V 0/50/60Hz



Article No.	8820117
P	6.0 W
Φ_{Lamp}	460 lm
$\Phi_{Luminaire}$	460 lm
η	100.00 %
Luminous efficacy	76.7 lm/W
CCT	3000 K
CRI	80



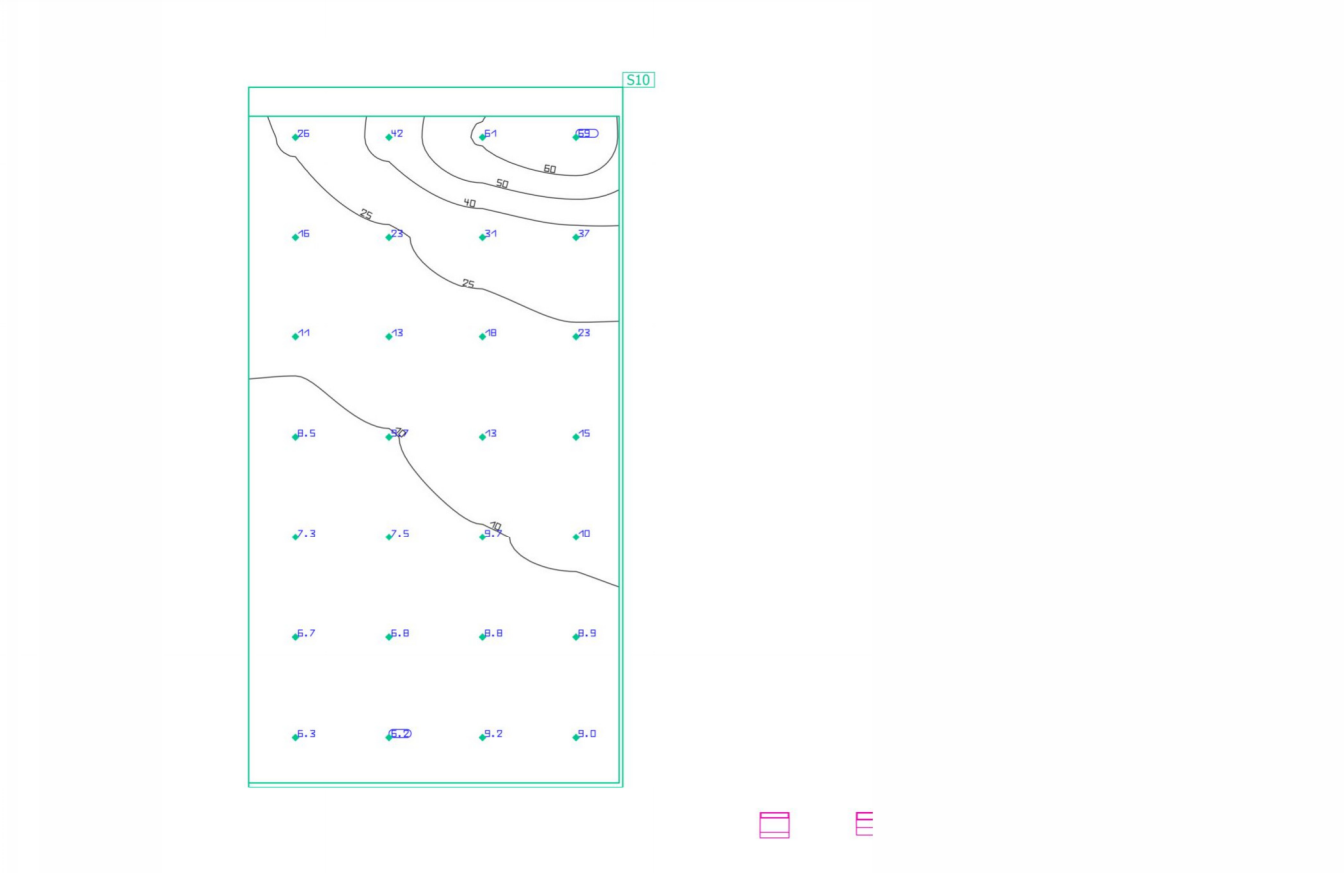
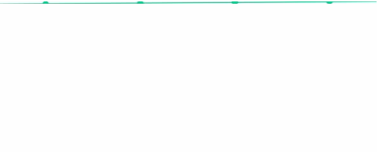
Polar LDC

Glare evaluation according to UGR												
μ Ceiling		70	70	50	50	30	70	70	50	50	30	
μ Walls		50	30	50	30	30	50	30	50	30	30	
μ Floor		20	20	20	20	20	20	20	20	20	20	
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	8.2	9.0	8.5	9.2	9.4	17.9	18.7	18.1	18.9	19.1	
	3H	8.7	9.4	9.0	9.7	9.9	17.8	18.6	18.1	18.8	19.1	
	4H	8.8	9.5	9.1	9.8	10.0	17.9	18.5	18.2	18.8	19.1	
	6H	8.8	9.5	9.2	9.7	10.0	17.8	18.5	18.1	18.7	19.0	
	8H	8.8	9.4	9.1	9.7	10.0	17.8	18.4	18.1	18.7	19.0	
	12H	8.8	9.4	9.1	9.7	10.0	17.7	18.3	18.1	18.6	18.9	
4H	2H	8.6	9.3	8.9	9.6	9.8	17.7	18.4	18.0	18.6	18.9	
	3H	9.2	9.8	9.6	10.1	10.4	17.7	18.3	18.0	18.6	18.9	
	4H	9.4	9.9	9.8	10.3	10.6	17.7	18.2	18.1	18.6	18.9	
	6H	9.4	9.9	9.8	10.2	10.6	17.7	18.1	18.1	18.5	18.9	
	8H	9.4	9.8	9.8	10.2	10.6	17.6	18.1	18.1	18.4	18.8	
	12H	9.4	9.8	9.8	10.2	10.6	17.6	18.0	18.0	18.4	18.8	
8H	4H	9.5	9.9	9.9	10.3	10.7	17.6	18.0	18.0	18.4	18.8	
	6H	9.5	9.8	10.0	10.3	10.7	17.6	17.9	18.0	18.3	18.8	
	8H	9.5	9.8	10.0	10.2	10.7	17.5	17.8	18.0	18.3	18.7	
	12H	9.5	9.7	10.0	10.2	10.7	17.5	17.7	18.0	18.2	18.7	
	4H	9.4	9.8	9.9	10.2	10.6	17.6	17.9	18.0	18.3	18.8	
	6H	9.5	9.8	10.0	10.2	10.7	17.5	17.8	18.0	18.3	18.7	
12H	8H	9.5	9.7	10.0	10.2	10.7	17.5	17.7	18.0	18.2	18.7	
	12H	9.5	9.7	10.0	10.2	10.7	17.5	17.7	18.0	18.2	18.7	
Variation of the observer position for the luminaire distances S												
S = 1.0H		+0.6 / -0.6					+5.6 / -5.9					
S = 1.5H		+0.8 / -1.7					+8.3 / -7.2					
S = 2.0H		+1.4 / -2.8					+10.3 / -8.2					
Standard table		BK02					BK00					
Correction summand		-8.5					-0.6					
Corrected glare indices referring to 480lm Total luminous flux												

UGR diagram (SHR: 0.25)

Site 1

Calculation surface window 1

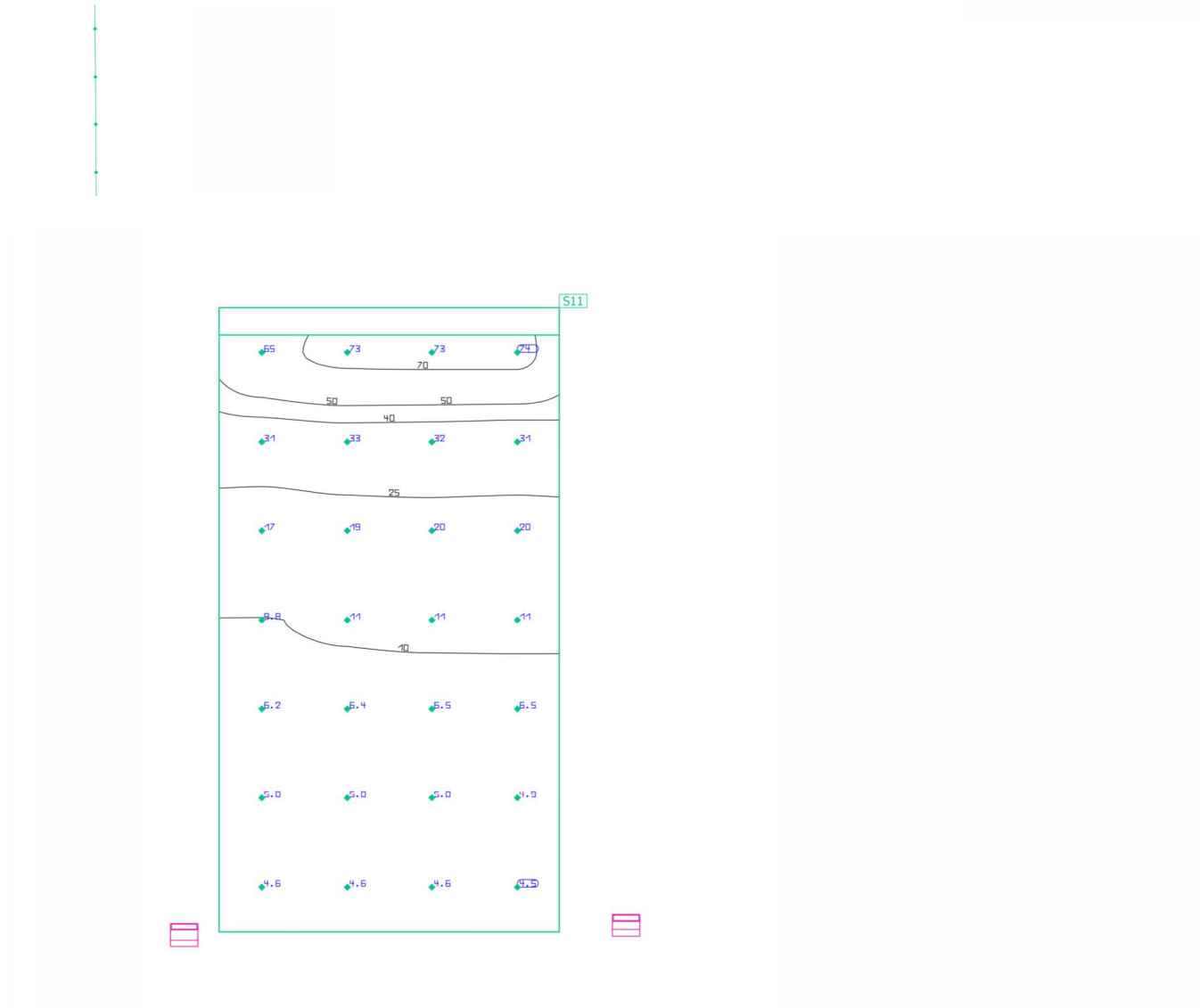


Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Calculation surface window 1 Perpendicular illuminance Height: 22.450 m	18.3 lx	6.24 lx	68.7 lx	0.34	0.091	S10

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Site 1

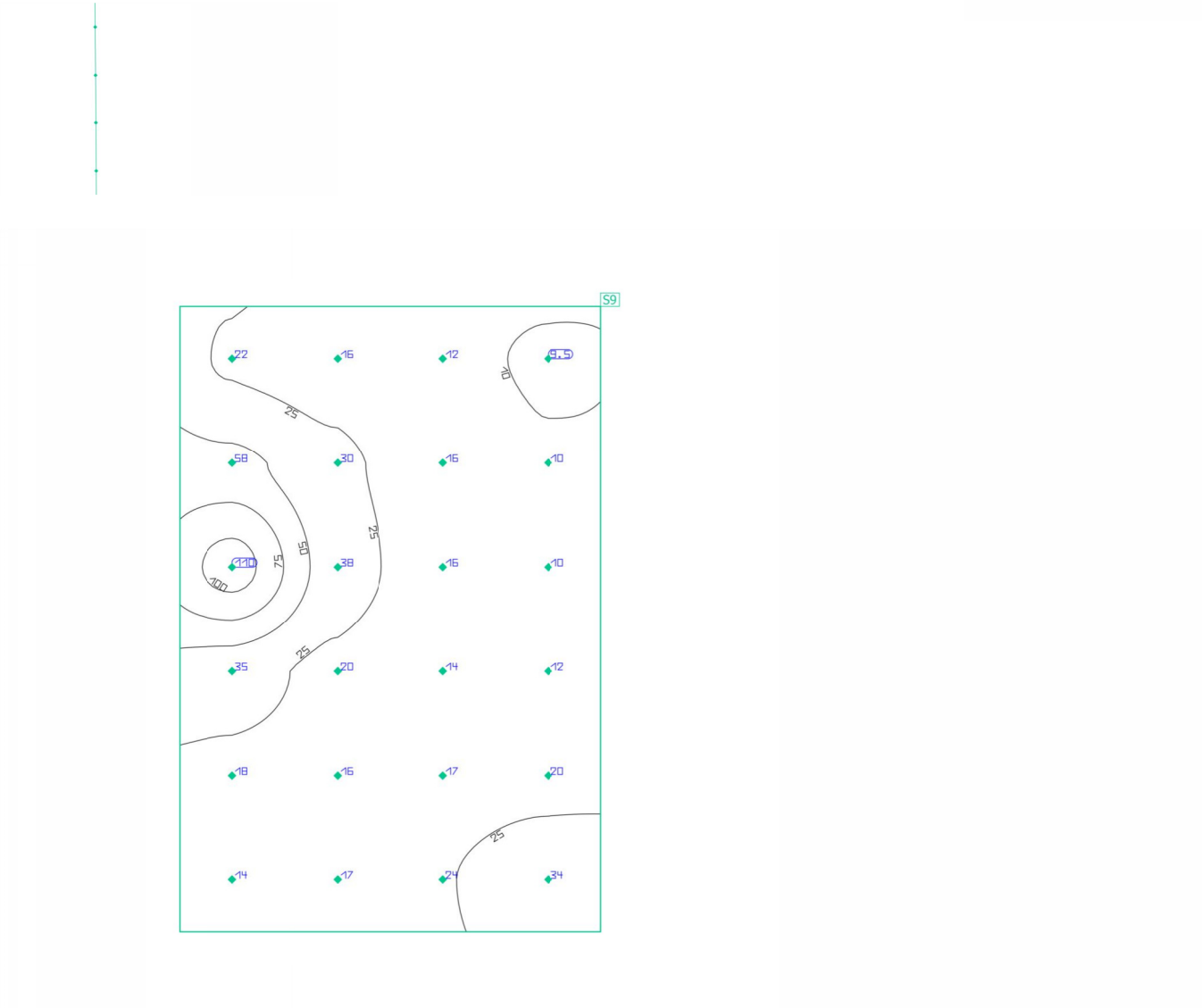
Calculation surface window 4



Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Calculation surface window 4	21.2 lx	4.46 lx	73.5 lx	0.21	0.061	S11
Perpendicular illuminance						
Height: 22.225 m						

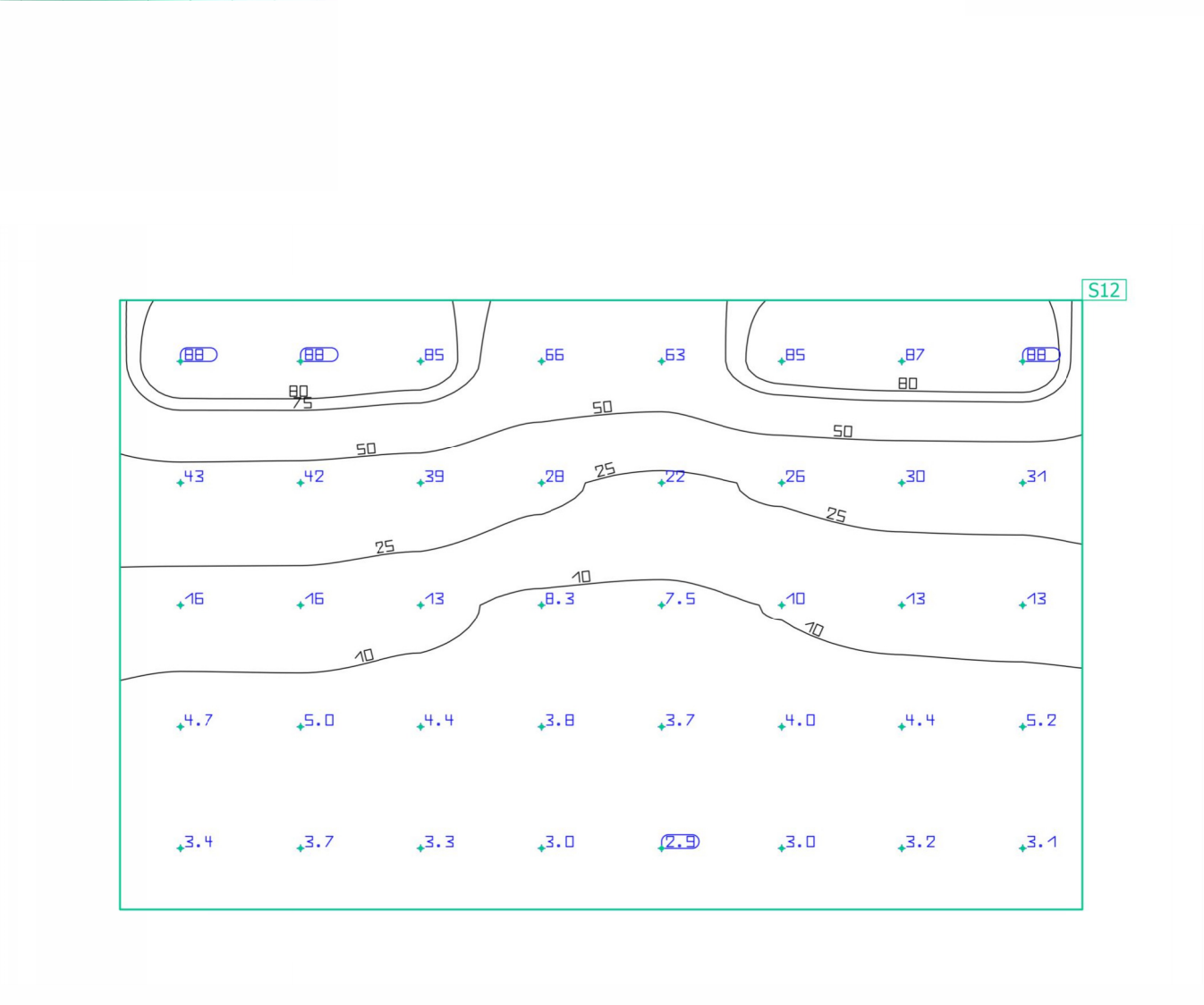
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Building 2
Calculation surface window 3



Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Calculation surface window 3 Perpendicular illuminance Height: 25.350 m	24.6 lx	9.47 lx	110 lx	0.38	0.086	S9

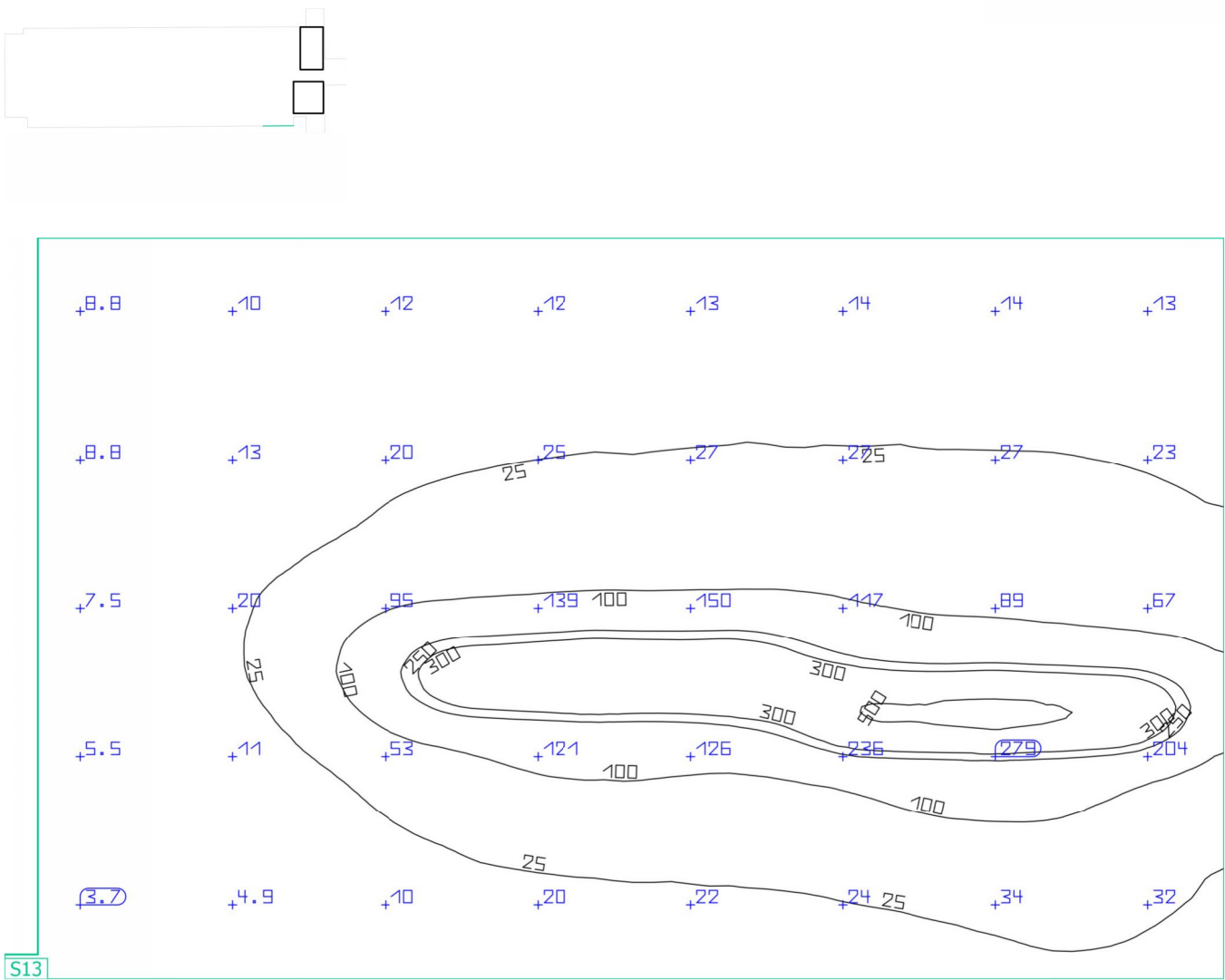
Building 2
Calculation surface section 4



Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Calculation surface section 4 Perpendicular illuminance Height: 12.700 m	26.7 lx	2.90 lx	88.3 lx	0.11	0.033	S12

Building 2 · Level 5

Surface result object 2 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Surface result object 2 (Wall)	65.7 lx	3.28 lx	541 lx	0.050	0.006	S13
Perpendicular illuminance (adaptive)						
Height: 1.314 m						

Building 2 · Level 5

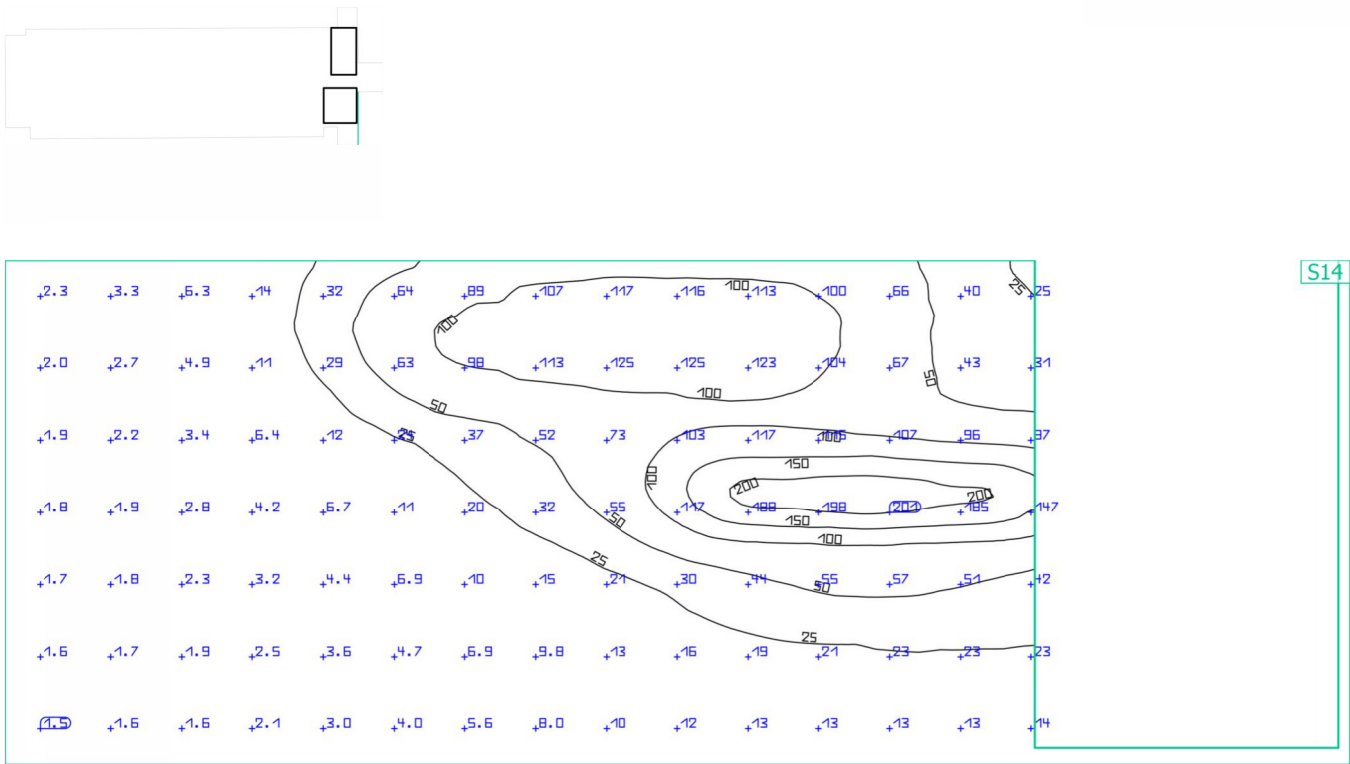
Surface result object 2 (Wall)



Properties	Ø	min	max	g ₁	g ₂	Index
Surface result object 2 (Wall)	17.9 cd/m ²	0.90 cd/m ²	147 cd/m ²	0.050	0.006	S13
Luminance						
Height: 1.314 m						

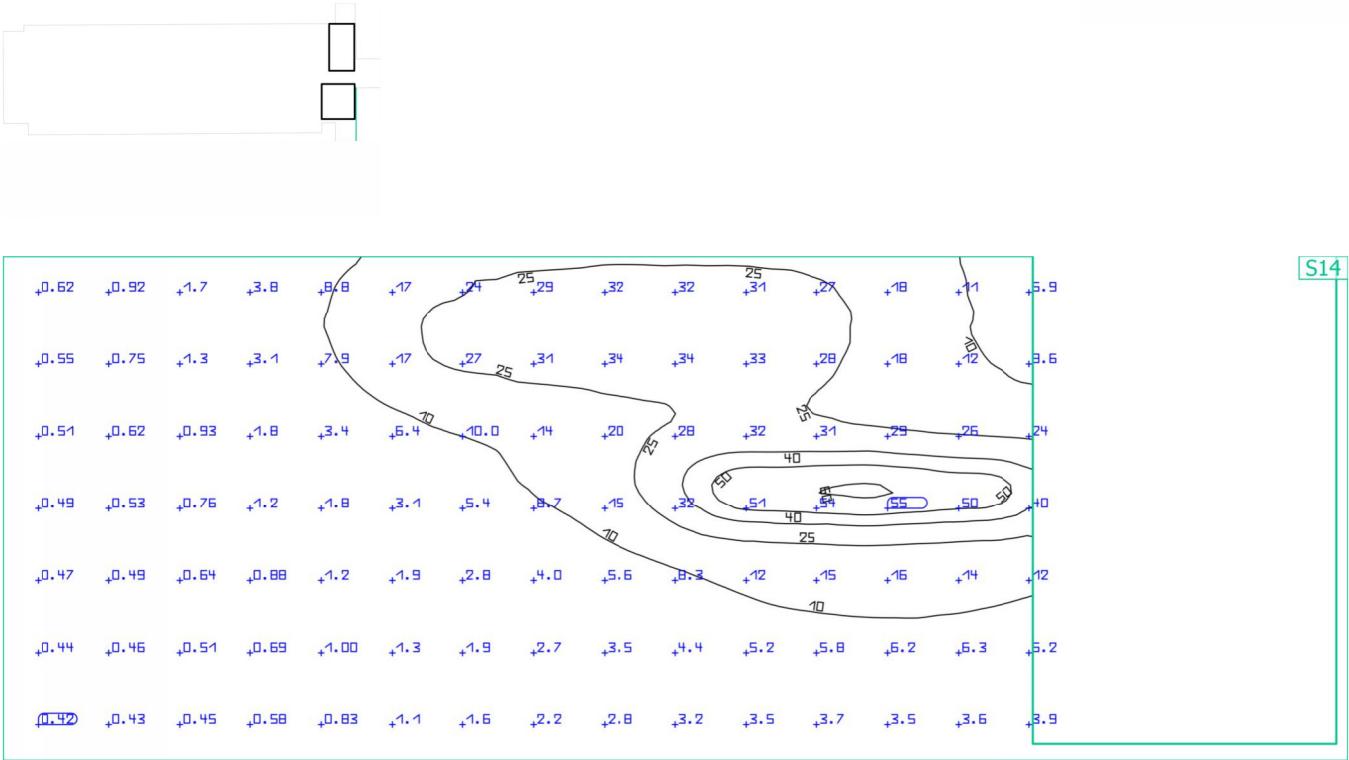
Building 2 · Level 5

Surface result object 3 (Wall)



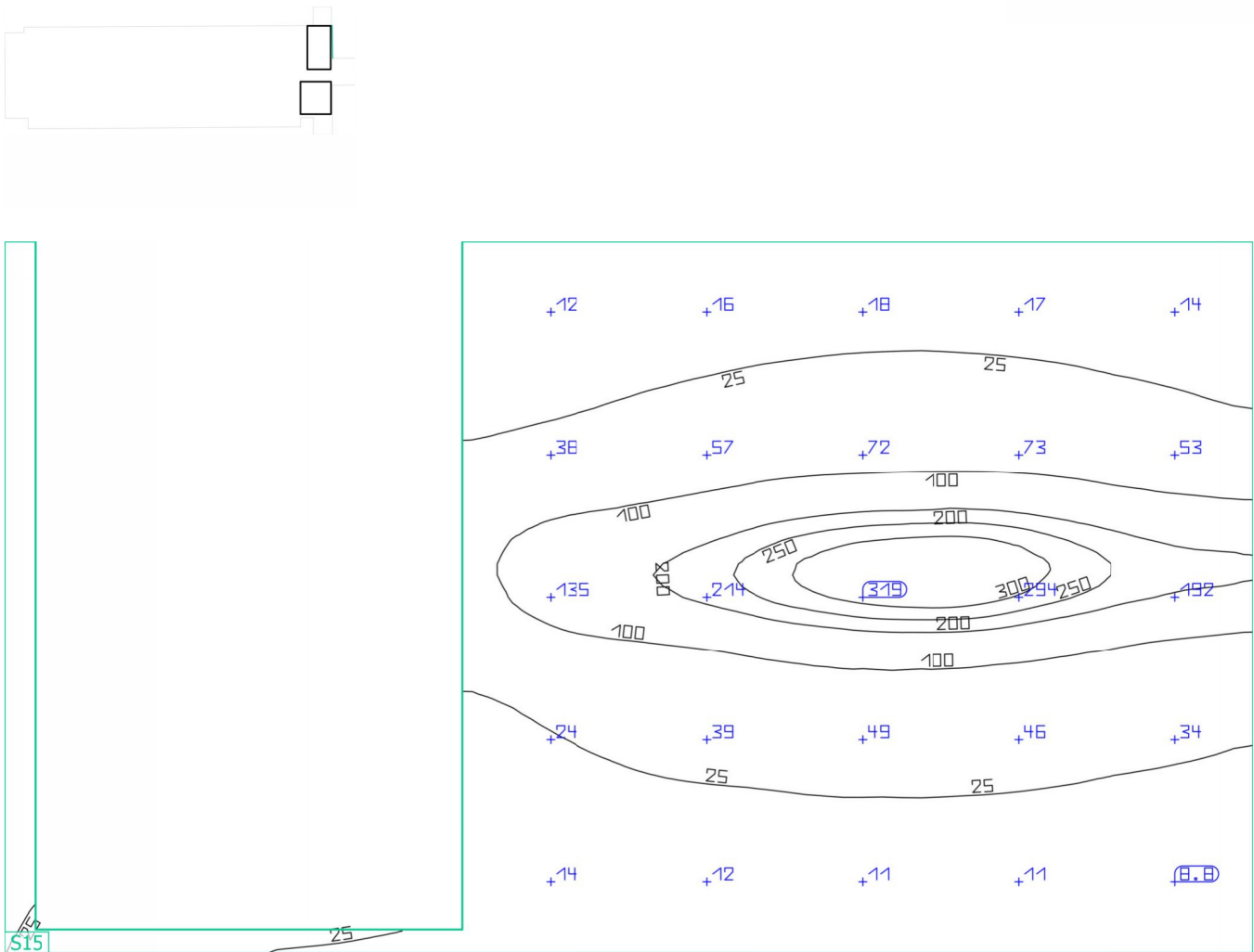
Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Surface result object 3 (Wall) Perpendicular illuminance (adaptive) Height: 1.525 m	41.3 lx	1.53 lx	224 lx	0.037	0.007	S14

Building 2 · Level 5
Surface result object 3 (Wall)



Properties	Ø	min	max	g ₁	g ₂	Index
Surface result object 3 (Wall) Luminance Height: 1.525 m	11.3 cd/m ²	0.42 cd/m ²	61.0 cd/m ²	0.037	0.007	S14

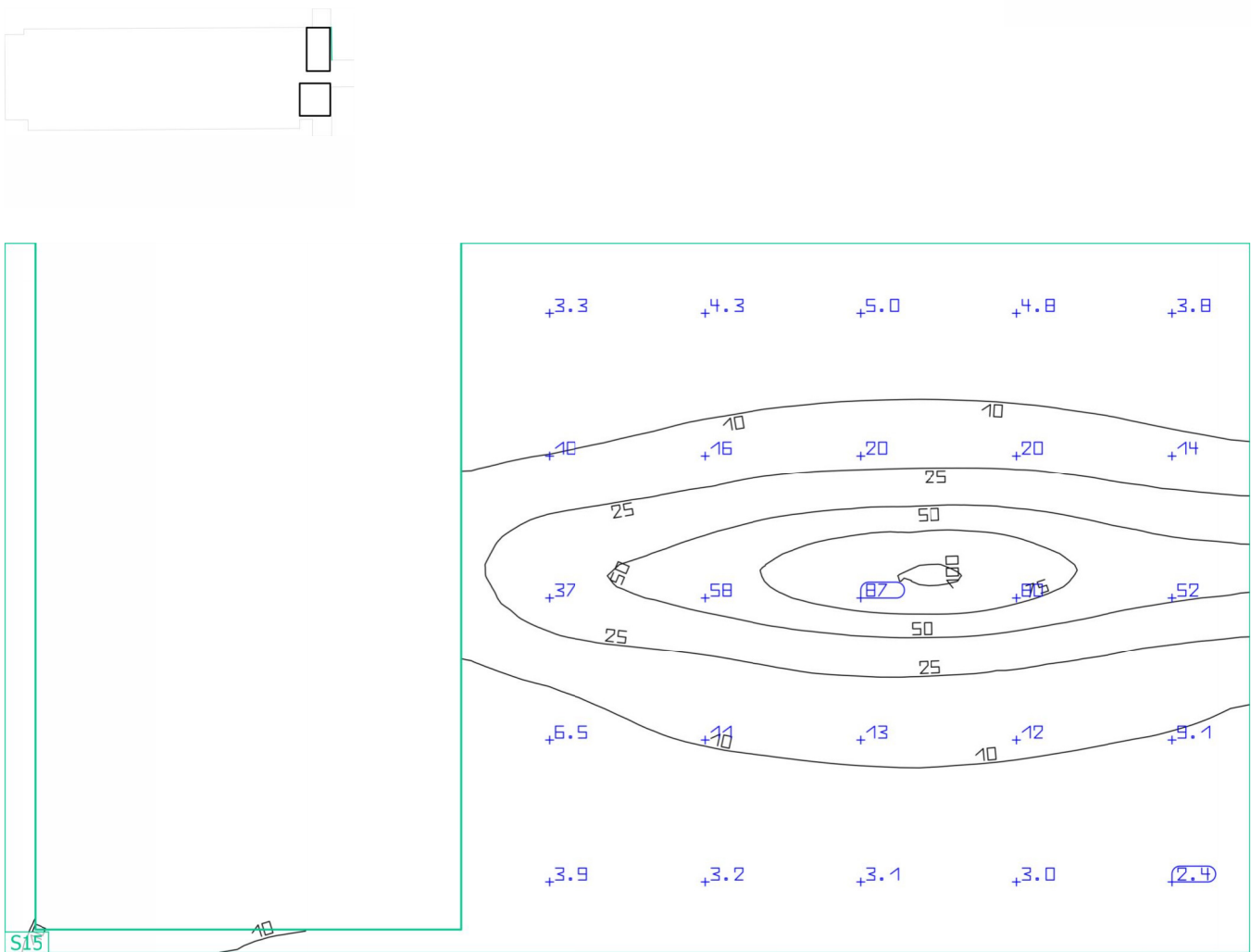
Building 2 · Level 5
Surface result object 4 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Surface result object 4 (Wall) Perpendicular illuminance (adaptive) Height: 1.525 m	63.6 lx	2.72 lx	376 lx	0.043	0.007	S15

Building 2 · Level 5

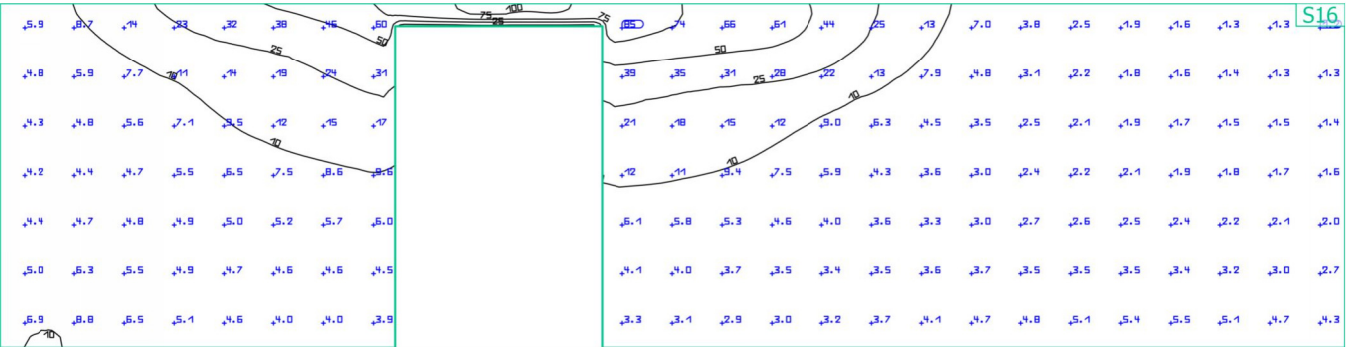
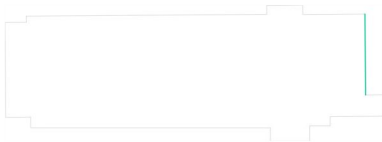
Surface result object 4 (Wall)



Properties	Ø	min	max	g ₁	g ₂	Index
Surface result object 4 (Wall)	17.3 cd/m ²	0.75 cd/m ²	102 cd/m ²	0.043	0.007	S15
Luminance						
Height: 1.525 m						

Building 2 · Level 6

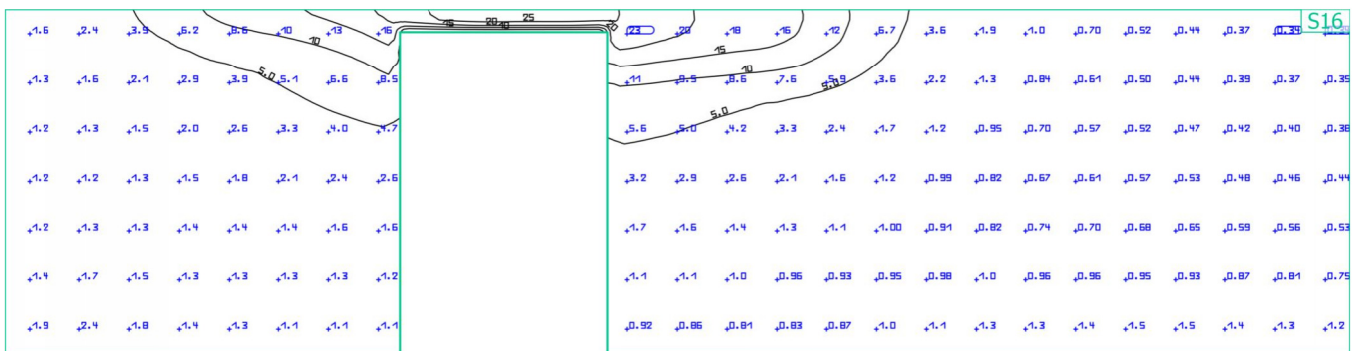
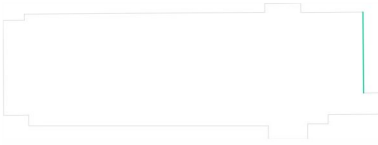
Surface result object 6 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	g_1	g_2	Index
Surface result object 6 (Wall) Perpendicular illuminance (adaptive) Height: 1.450 m	10.1 lx	1.21 lx	103 lx	0.12	0.012	S16

Building 2 · Level 6

Surface result object 6 (Wall)



Properties	Ø	min	max	g ₁	g ₂	Index
Surface result object 6 (Wall)	2.76 cd/m ²	0.33 cd/m ²	28.0 cd/m ²	0.12	0.012	S16
Luminance						
Height: 1.450 m						

Glossary

A

A	Formula symbol for a surface in the geometry
---	--

B

Background area	The background area borders the direct ambient area according to DIN EN 12464-1 and reaches up to the borders of the room. In larger rooms, the background area is at least 3 m wide. It is located horizontally at floor level.
-----------------	--

C

CCT	(Engl. correlated colour temperature) Body temperature of a thermal radiator which serves to describe its light colour. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light colour. The colour temperature of gas-discharge lamps and semi-conductors are termed "correlated colour temperature" in contrast to the colour temperature of thermal radiators. Allocation of the light colours to the colour temperature ranges acc. to EN 12464-1: Light colour - colour temperature [K] warm white (ww) < 3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K
-----	--

Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
------------------	---

CRI	(Engl. colour rendering index) Designation for the colour rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3: 1995. The general colour rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the remission spectra of defined 8 test colours (see DIN 6169 or CIE 1974) to a reference light source.
-----	---

D

Daylight factor	Ratio of the illuminance achieved solely by daylight incidence at a point in the inside to the horizontal illuminance in the outer area under an unobstructed sky. Formula symbol: D (Engl. daylight factor) Unit: %
-----------------	---

Glossary

Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.
E	
Eta (η)	(light output ratio) The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed. Unit: %
G	
g1	Often also Uo (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from Emin to $\bar{E}$ and is required, for instance, in standards for illumination of workstations.
g2	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of Emin to Emax and is generally only relevant for certifying the emergency lighting acc. to EN 1838.
I	
Illuminance	Describes the ratio of the luminous flux that strikes a certain surface to the size of this surface ($\text{lm}/\text{m}^2 = \text{lx}$). The illuminance is not tied to an object surface. It can be determined anywhere in space (inside or outside). The illuminance is not a product feature because it is a recipient value. Luxometers are used for measuring. Unit: Lux Abbreviation: lx Formula symbol: E
Illuminance, adaptive	For the determining of the middle adaptive illuminance on a surface, this is rastered "adaptively". In the area of large illuminance differences within the surface, the raster is subdivided finer; within lesser differences, a rougher classification is made.
Illuminance, horizontal	Illuminance that is calculated or measured on a horizontal (level) surface (this can be for example a table top or the floor). The horizontal illuminance is usually identified by the formula letter Eh.
Illuminance, perpendicular	Illuminance that is calculated or measured plumb-vertical to a surface. This needs to be taken into account for tilted surfaces. If the surface is horizontal or vertical, then there is no difference between the perpendicular and the horizontal or vertical illuminance.

Glossary

Illuminance, vertical	Illuminance that is calculated or measured on a vertical surface (this can be for example the front of some shelves). The vertical illuminance is usually identified by the formula letter E_v.
L	
LENI	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193 Unit: kWh/m² year
LLMF	(Engl. lamp lumen maintenance factor)/acc. to CIE 97: 2005 Lamp flux maintenance factor that takes the luminous flux reduction into account of a luminaire or an LED module in the course of the operating time. The lamp flux maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no luminous flux reduction existing).
LMF	(Engl. luminaire maintenance factor)/acc. to CIE 97: 2005 Luminaire maintenance factor that takes the soiling into account of the luminaire in the course of the operating time. The luminaire maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
LSF	(Engl. lamp survival factor)/acc. to CIE 97: 2005 Lamp survival factor that takes the total failure into account of a luminaire in the course of the operating time. The lamp survival factor is specified as a decimal digit and can have a maximum value of 1 (no failures existing within the time concerned or prompt replacement after the failure).
Luminance	Dimension for the "brightness impression" that the human eye has of a surface. The surface itself can emit light thereby or light striking it can be reflected (emitter value). It is the only photometric value that the human eye can perceive. Unit: Candela per square metre Abbreviation: cd/m² Formula symbol: L
Luminous efficacy	Ratio of the emitted luminous flux Φ [lm] to the absorbed electrical power P [W] Unit: lm/W. This ratio can be formed for the lamp or LED module (lamp or module light output), the lamp or module with control gear (system light output) and the complete luminaire (luminaire light output).

Glossary

Luminous flux	Dimension for the total light output that is emitted from one light source in all directions. It is thus an "emitter value" that specifies the entire emitting output. The luminous flux of a light source can only be determined in a laboratory. A difference is made between the lamp or LED module luminous flux and the luminaire luminous flux. Unit: Lumen Abbreviation: lm Formula symbol: Φ
Luminous intensity	Describes the intensity of the light in a certain direction (emitter value). The luminous intensity is a matter of the luminous flux Φ that is emitted in a certain spherical angle Ω. The radiation characteristics of a light source are presented graphically in a light distribution curve (LDC). The luminous intensity is an SI base unit. Unit: Candela Abbreviation: cd Formula symbol: I
M	
Maintenance factor	See MF
MF	(Engl. maintenance factor)/acc. to CIE 97: 2005 Maintenance factor as decimal number between 0 and 1 that describes the ratio of the new value of a photometric planning parameter (e.g. of the illuminance) to a maintenance value after a certain time. The maintenance factor takes into account the soiling of luminaires and rooms as well as the luminous flux reduction and the failure of light sources. The maintenance factor is taken into account either overall or determined in detail acc. to CIE 97: 2005 by the formula $RMF \times LMF \times LLMF \times LSF$.
P	
P	(Engl. power) Electric power consumption Unit: watt Abbreviation: W
R	
Reflection factor	The reflection factor of a surface describes how much of the striking light is reflected back. The reflection factor is defined by the colour of the surface.

Glossary

RMF	(Engl. room maintenance factor)/acc. to CIE 97: 2005 Room maintenance factor that takes the soiling into account of the space encompassing surfaces in the course of the operating time. The room maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
S	
Surrounding area	The ambient area directly borders the area of the visual task and should be planned with a width of at least 0.5 m according to DIN EN 12464-1. It is at the same height as the area of the visual task.
U	
UGR (max)	(unified glare rating) Measure for the psychological glare effect in interiors. In addition to luminaire luminance, the UGR value also depends on the position of the observer, the viewing direction and the ambient luminance. Among other things, EN 12464-1 specifies maximum permissible UGR values for various indoor workplaces.
UGR observer	Calculation point in the room, for the DIALux the UGR value is determined. The location and height of the calculation point should correspond to the typical observer position (position and eye level of the user).
V	
Visual task area	The area that is needed for carrying out the visual task in accordance with DIN EN 12464-1. The height corresponds with the height at which the visual task is executed.
W	
Wall zone	Circumferential area between working plane and walls which is not taken into account for the calculation.
Workplane	Virtual measuring or calculation surface at the height of the visual task that generally follows the room geometry. The working plane may also feature a wall zone.