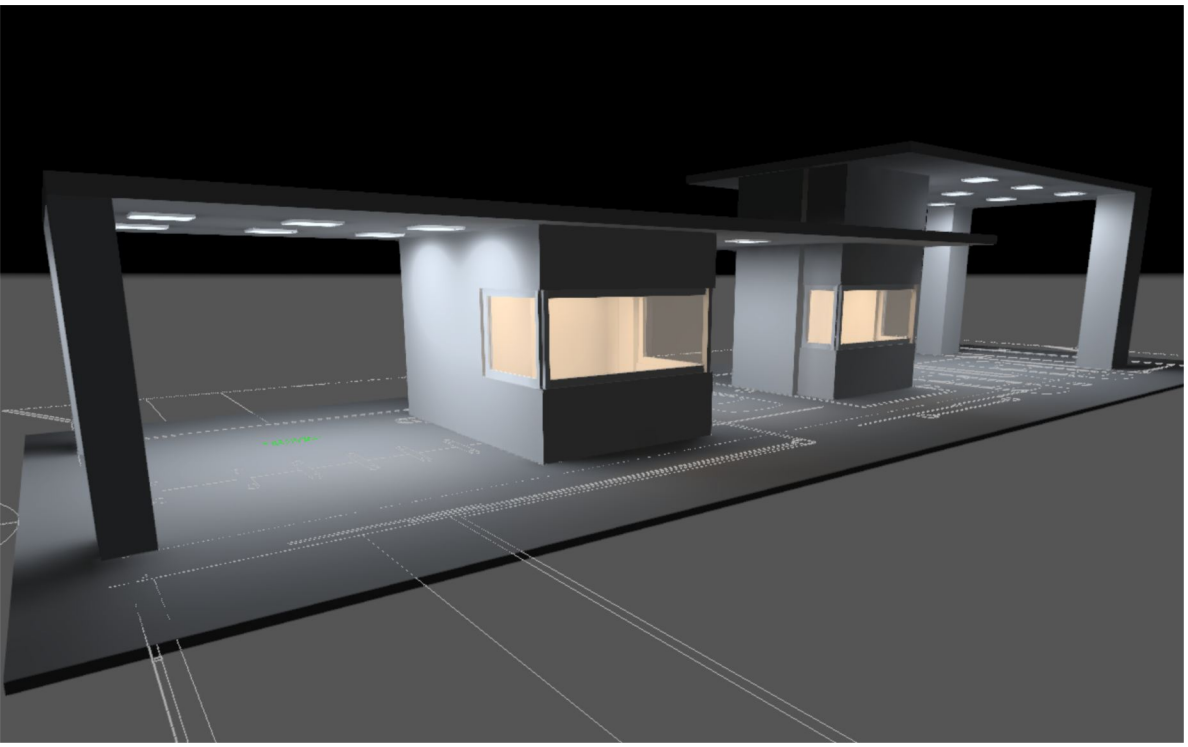
Date 09/10/2026



IFES Serra - Guarita

Estudo Luminotécnico

Object
Av. dos Sabiás, 330 - Morada
de Laranjeiras, Serra - ES

Created with DIALux

DIALux

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DIALux

Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
78196 lm	1006.0 W	77.7 lm/W

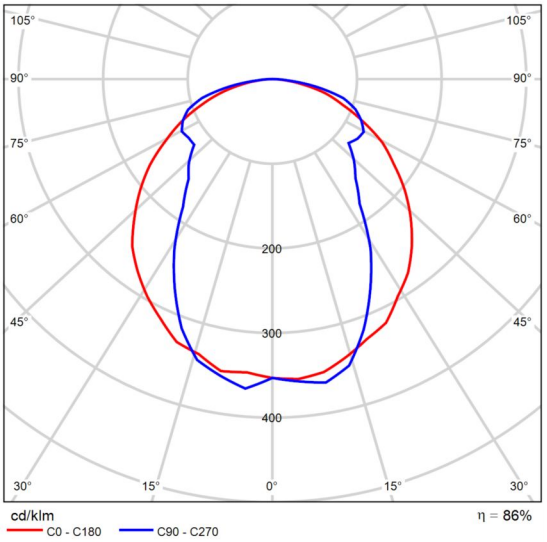
pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
2	Lumicenter Lighting		CAN03-E216	33.0 W	2061 lm	62.5 lm/W
2	Lumicenter Lighting		CAN03-E232	65.0 W	4637 lm	71.3 lm/W
18	Not yet a DIALux member	147920876	LED-PAINEL-MOD-SOBR-600X600-NE4000K-45W-BIV-3600	45.0 W	3600 lm	80.0 lm/W

DIALux

Product data sheet

Lumicenter Lighting - CAN03-E216

P	33.0 W
Φ_{Lamp}	2400 lm
$\Phi_{Luminaire}$	2061 lm
η	85.88 %
Luminous efficacy	62.5 lm/W
CCT	3000 K
CRI	100



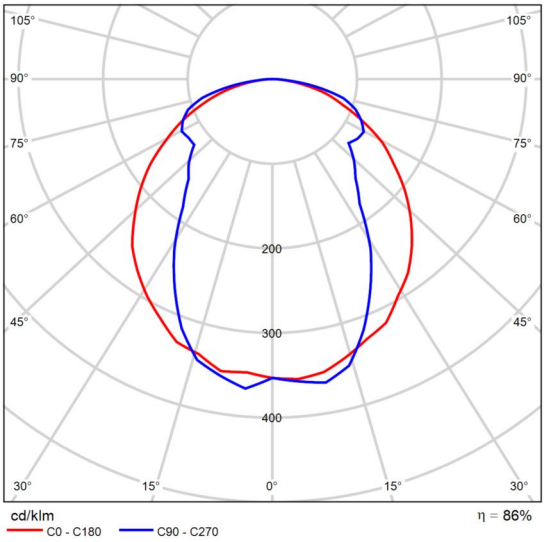
Polar LDC

DIALux

Product data sheet

Lumicenter Lighting - CAN03-E232

P	65.0 W
Φ_{Lamp}	5400 lm
$\Phi_{Luminaire}$	4637 lm
η	85.88 %
Luminous efficacy	71.3 lm/W
CCT	3000 K
CRI	100

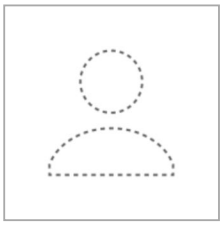


Polar LDC

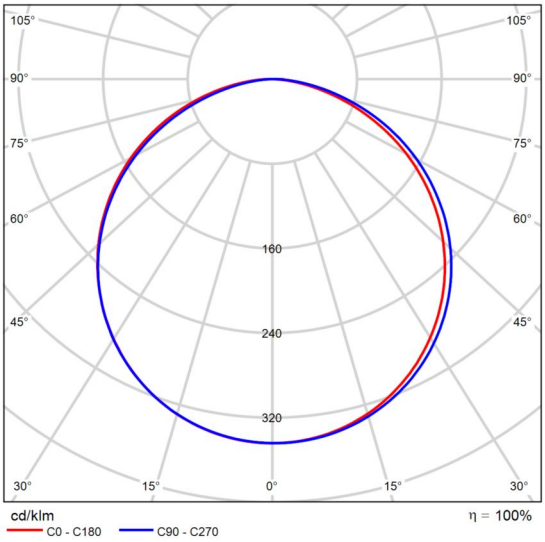
DIALux

Product data sheet

Not yet a DIALux member - LED-PAINEL-MOD-SOBR-600X600-NE4000K-45W-BIV-3600



Article No.	147920876
P	45.0 W
Φ_{Lamp}	3600 lm
$\Phi_{Luminaire}$	3600 lm
η	100.01 %
Luminous efficacy	80.0 lm/W
CCT	4000 K
CRI	100

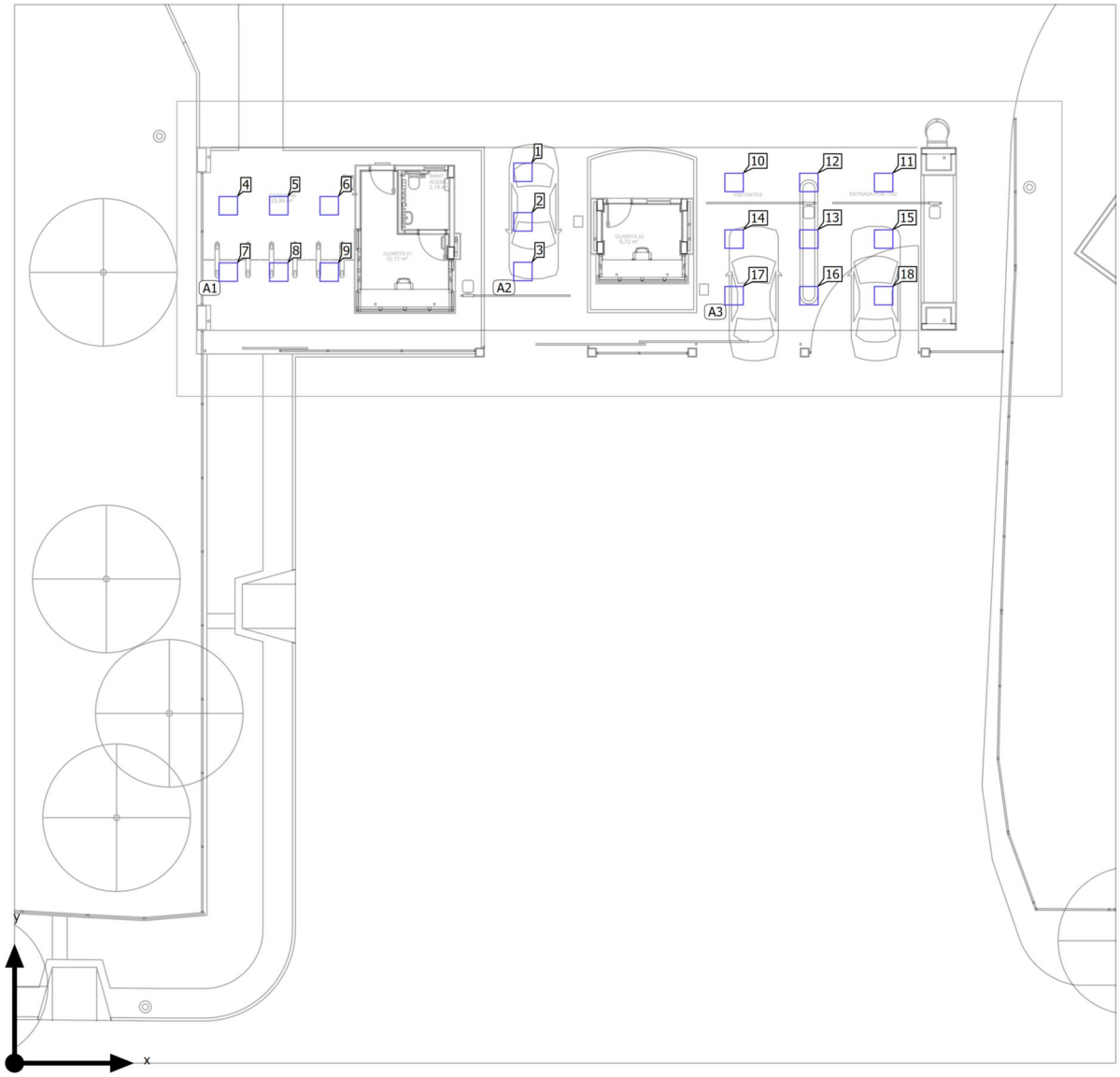


Polar LDC

DIALux

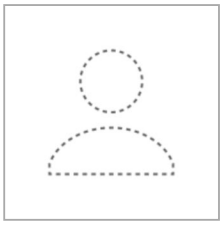
IFES SERRA

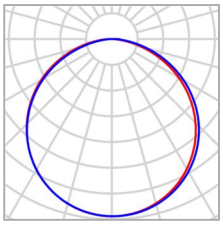
Luminaire layout plan



IFES SERRA

Luminaire layout plan





Manufacturer	Not yet a DIALux member
Article No.	147920876
Article name	LED-PAINEL-MOD-SOBR-600X600-NE4000K-45W-BIV-3600
Fitting	1x LED INTEGRADO

P	45.0 W
$\Phi_{Luminaire}$	3600 lm

6 x Not yet a DIALux member LED-PAINEL-MOD-SOBR-600X600-NE4000K-45W-BIV-3600

Type	Field Arrangement
1st luminaire (X/Y/Z)	7.243 m / 26.809 m / 3.380 m
X-direction	3 pcs., Centre - centre, 1.710 m
Y-direction	2 pcs., Centre - centre, 2.250 m
Arrangement	A1

X	Y	Mounting height	Luminaire
7.243 m	29.059 m	3.380 m	4
8.953 m	29.059 m	3.380 m	5
10.663 m	29.059 m	3.380 m	6
7.243 m	26.809 m	3.380 m	7
8.953 m	26.809 m	3.380 m	8
10.663 m	26.809 m	3.380 m	9

3 x Not yet a DIALux member LED-PAINEL-MOD-SOBR-600X600-NE4000K-45W-BIV-3600

Type	Field Arrangement
1st luminaire (X/Y/Z)	17.228 m / 26.829 m / 3.380 m
X-direction	1 pcs., Centre - centre, 4.580 m

X	Y	Mounting height	Luminaire
17.228 m	30.193 m	3.380 m	1
17.228 m	28.511 m	3.380 m	2
17.228 m	26.829 m	3.380 m	3

IFES SERRA

Luminaire layout plan

Y-direction	3 pcs., Centre - centre, 1.682 m
Arrangement	A2

9 x Not yet a DIALux member LED-PAINEL-MOD-SOBR-600X600-NE4000K-45W-BIV-3600

Type	Field Arrangement
1st luminaire (X/Y/Z)	24.385 m / 26.010 m / 4.980 m
X-direction	3 pcs., Centre - centre, 2.533 m
Y-direction	3 pcs., Centre - centre, 1.919 m
Arrangement	A3

X	Y	Mounting height	Luminaire
24.385 m	29.847 m	4.980 m	10
29.452 m	29.848 m	4.980 m	11
26.918 m	29.848 m	4.980 m	12
26.918 m	27.929 m	4.980 m	13
24.385 m	27.928 m	4.980 m	14
29.452 m	27.929 m	4.980 m	15
26.918 m	26.010 m	4.980 m	16
24.385 m	26.010 m	4.980 m	17
29.452 m	26.010 m	4.980 m	18

IFES SERRA

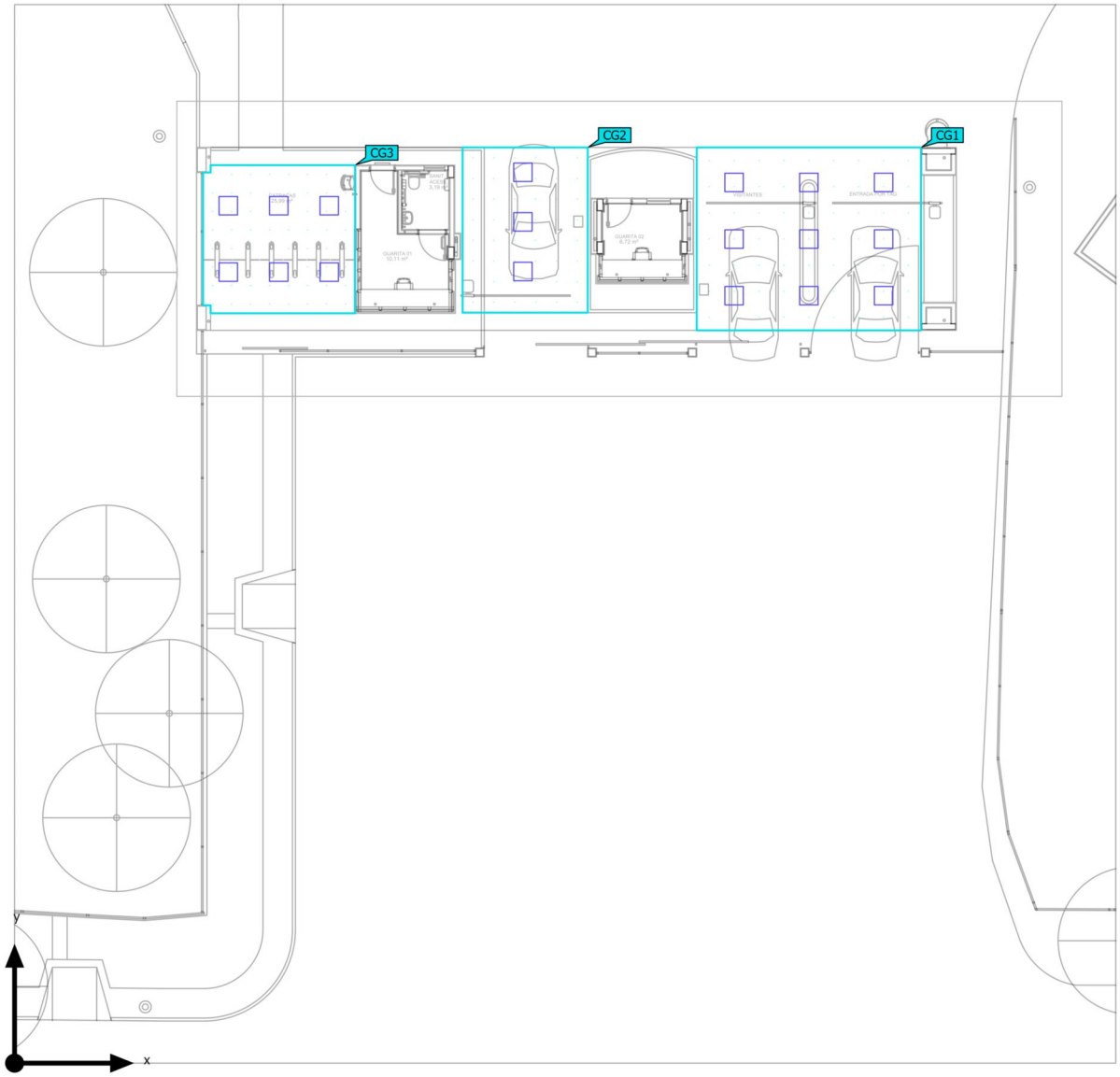
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
64800 lm	810.0 W	80.0 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
18	Not yet a DIALux member	147920876	LED-PAINEL-MOD-SOBR-600X600-NE4000K-45W-BIV-3600	45.0 W	3600 lm	80.0 lm/W

IFES SERRA (Light scene 1)

Calculation objects



IFES SERRA (Light scene 1)

Calculation objects

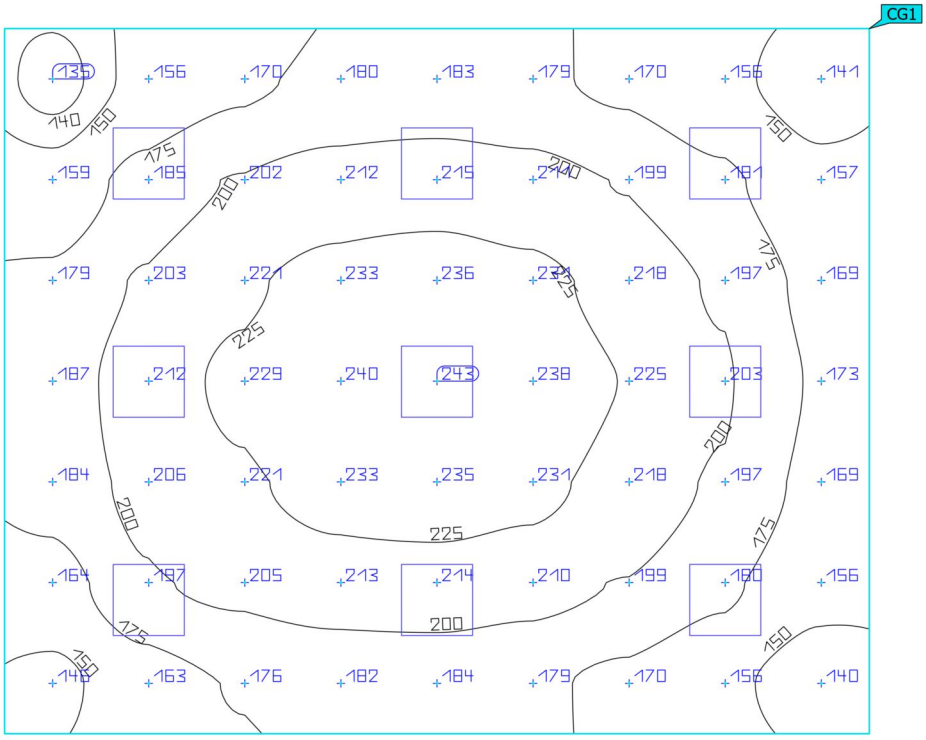
Calculation surfaces

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Catracas Perpendicular illuminance Height: 0.000 m	275 lx	181 lx	354 lx	0.66	0.51	CG3
Entrada Carros Perpendicular illuminance Height: 0.000 m	193 lx	135 lx	243 lx	0.70	0.56	CG1
Saída Carros Perpendicular illuminance Height: 0.000 m	162 lx	96.3 lx	215 lx	0.59	0.45	CG2

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

IFES SERRA (Light scene 1)

Entrada Carros

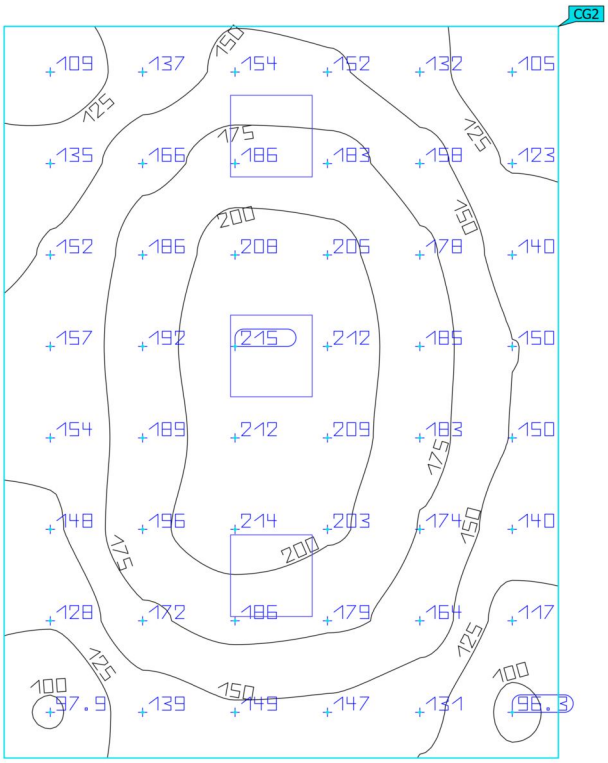


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Entrada Carros Perpendicular illuminance Height: 0.000 m	193 lx	135 lx	243 lx	0.70	0.56	CG1

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

IFES SERRA (Light scene 1)

Saída Carros

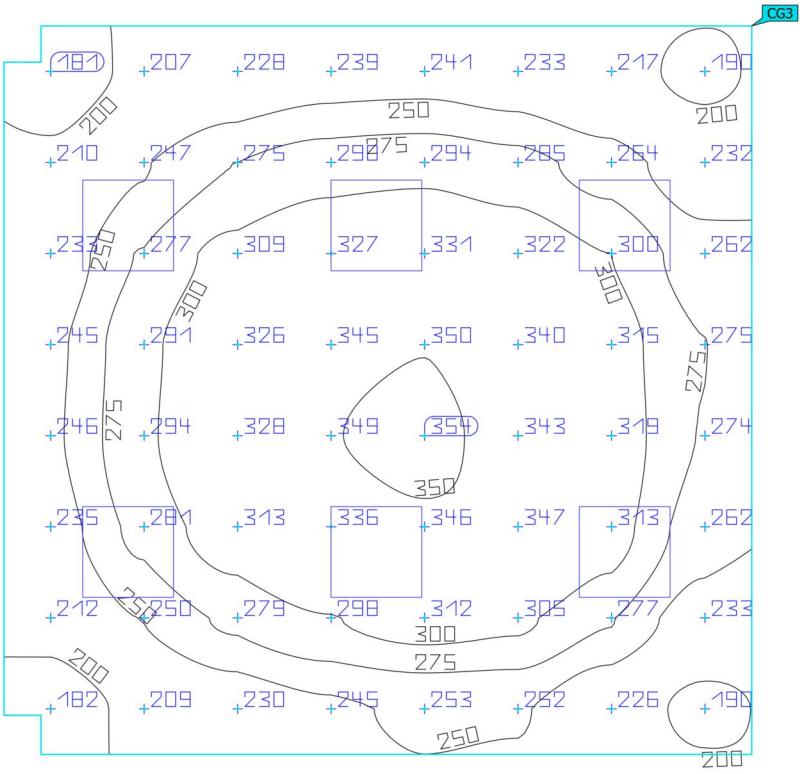


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Saída Carros Perpendicular illuminance Height: 0.000 m	162 lx	96.3 lx	215 lx	0.59	0.45	CG2

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

IFES SERRA (Light scene 1)

Catracas



Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Catracas Perpendicular illuminance Height: 0.000 m	275 lx	181 lx	354 lx	0.66	0.51	CG3

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Guarita 01 · Térreo (Light scene 1)

Room list



Guarita 01 · Térreo (Light scene 1)

Room list

Guarita 01

P_{total}	A_{Room}	Lighting power density	$\bar{E}_{perpendicular\ (Working\ plane)}$
98.0 W	10.11 m²	9.69 W/m² = 2.48 W/m²/100 lx (Space) 15.02 W/m² = 3.84 W/m²/100 lx (Working plane)	391 lx

pcs.	Manufacturer	Article No.	Article name	P	$\Phi_{Luminaire}$
1	Lumicenter Lighting		CAN03-E216	33.0 W	2061 lm
1	Lumicenter Lighting		CAN03-E232	65.0 W	4637 lm

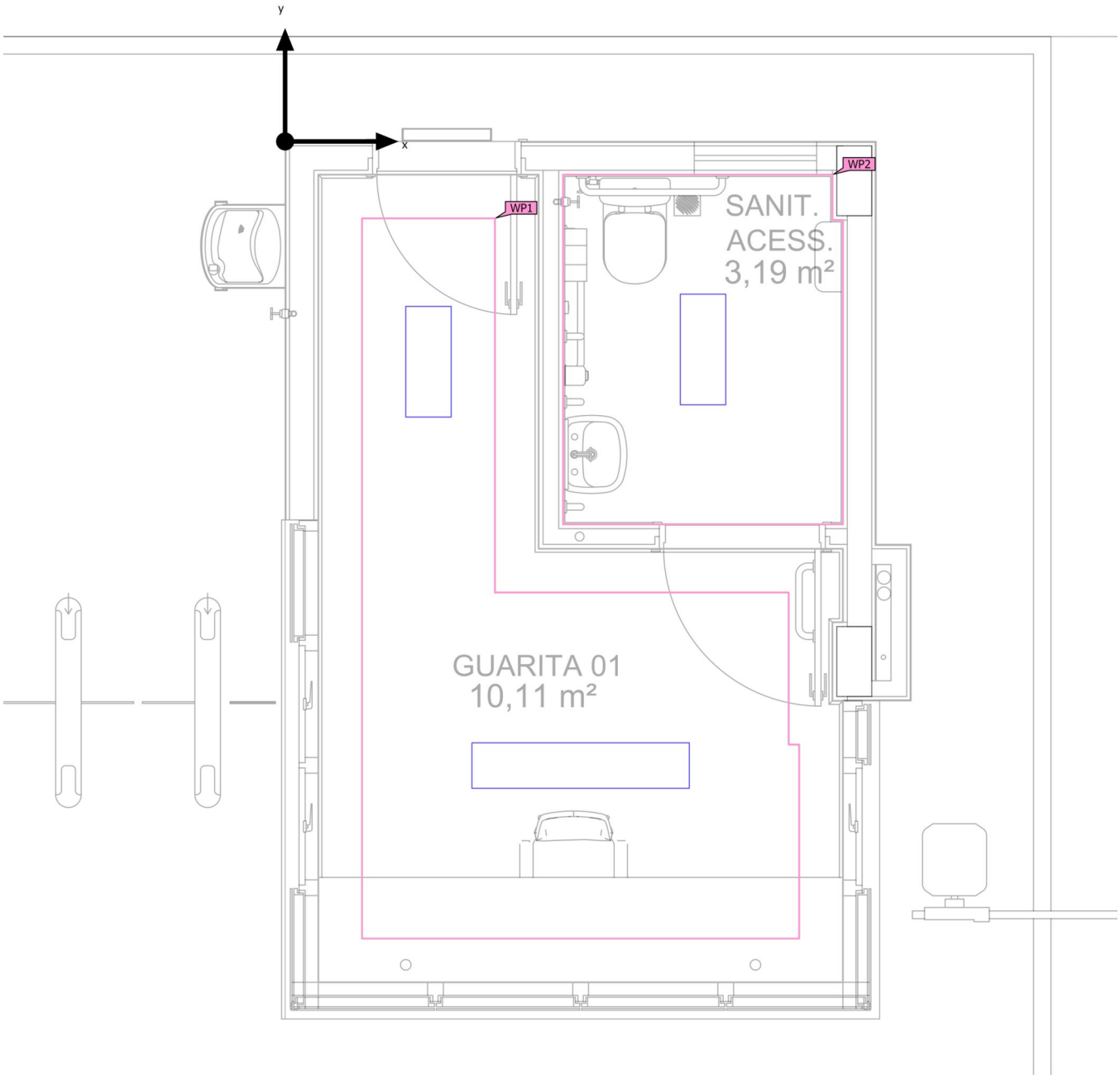
Sanit. Acess.

P_{total}	A_{Room}	Lighting power density	$\bar{E}_{perpendicular\ (Working\ plane)}$
33.0 W	3.18 m²	10.36 W/m² = 5.10 W/m²/100 lx (Space)	203 lx

pcs.	Manufacturer	Article No.	Article name	P	$\Phi_{Luminaire}$
1	Lumicenter Lighting		CAN03-E216	33.0 W	2061 lm

Guarita 01 · Térreo (Light scene 1)

Calculation objects



Guarita 01 · Térreo (Light scene 1)

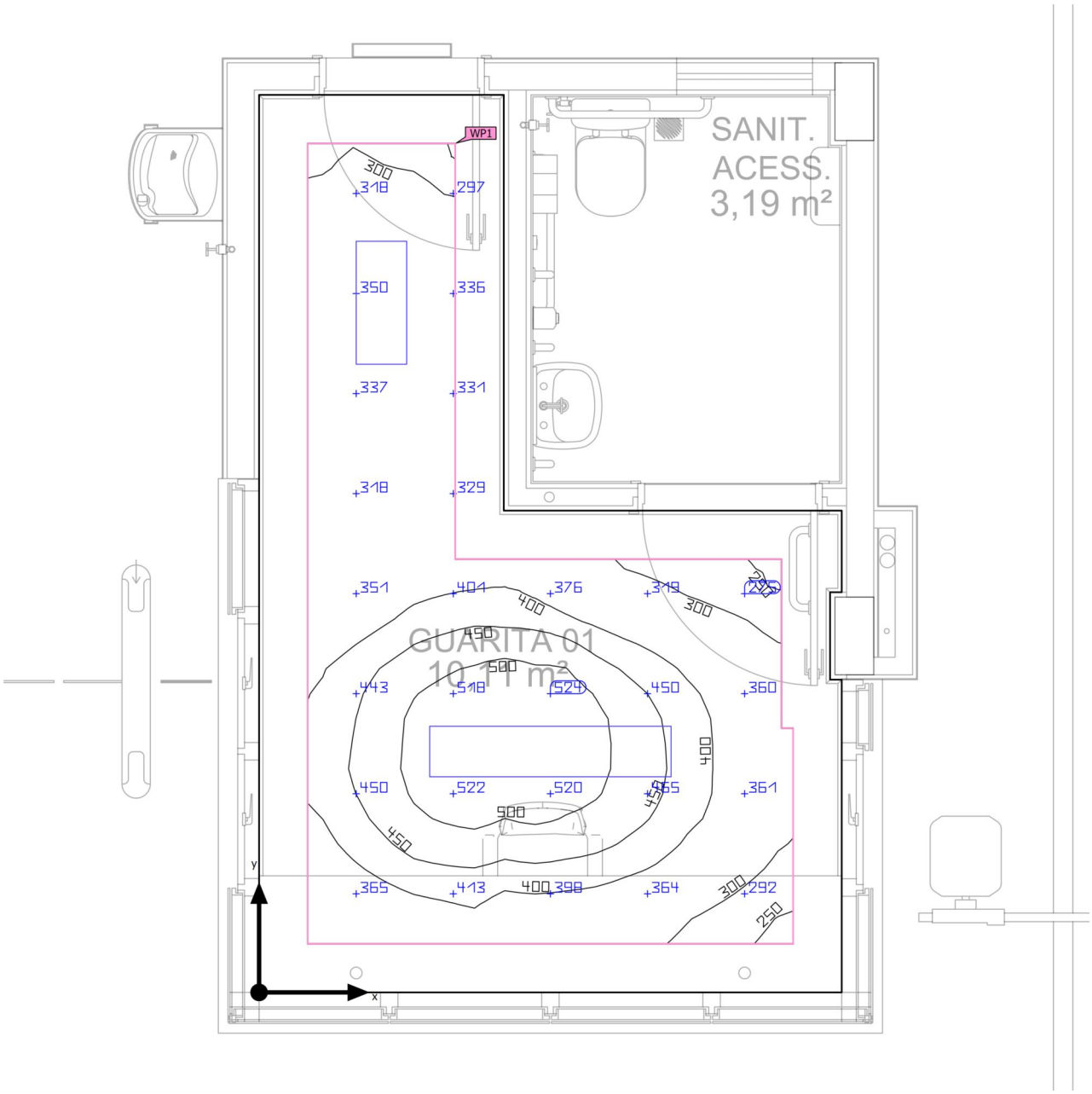
Calculation objects

Working planes

Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Guarita 01) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.250 m	391 lx (≥ 300 lx) ✓	239 lx	536 lx	0.61 (≥ 0.60) ✓	0.45	WP1
Working plane (Sanit. Acess.) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	203 lx (≥ 100 lx) ✓	159 lx	229 lx	0.78 (≥ 0.40) ✓	0.69	WP2

Guarita 01 · Térreo · Guarita 01 (Light scene 1)

Summary



Ground area	10.11 m²	Clearance height	2.800 m
Reflection factors	Ceiling: 70.0 %, Walls: 70.0 %, Floor: 20.0 %	Mounting height	2.800 m
		Height Working plane	0.800 m
Maintenance factor	0.80 (fixed)	Wall zone Working plane	0.250 m

Guarita 01 · Térreo · Guarita 01 (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	391 lx	≥ 300 lx	✓	WP1
	U_o (g_1)	0.61	≥ 0.60	✓	WP1
	Lighting power density	15.02 W/m²	–		
		3.84 W/m²/100 lx	–		
Energy estimation(2)	Consumption	[153 - 243] kWh/a	max. 400 kWh/a	✓	
Space	Lighting power density	9.69 W/m²	–		
		2.48 W/m²/100 lx	–		

(1) Based on a rectangular space of 4.620 m x 3.000 m and SHR of 0.25.
(2) Calculated using DIN:18599-4.

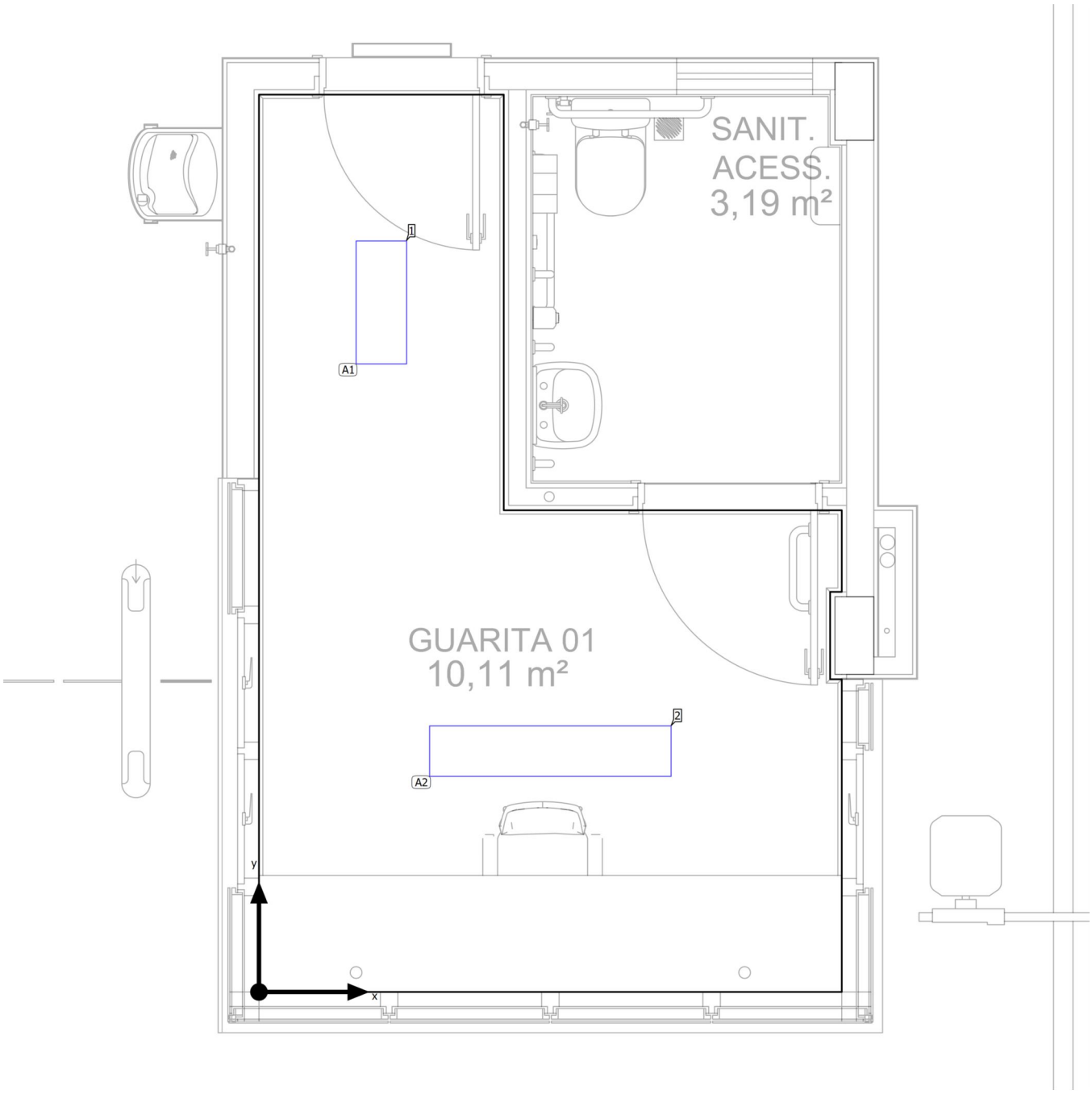
Utilisation profile: General areas inside buildings - Control rooms (11.3 Surveillance room)

Luminaire list

pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
1	Lumicenter Lighting		CAN03-E216	–	33.0 W	2061 lm	62.5 lm/W
1	Lumicenter Lighting		CAN03-E232	–	65.0 W	4637 lm	71.3 lm/W

Guarita 01 · Térreo · Guarita 01

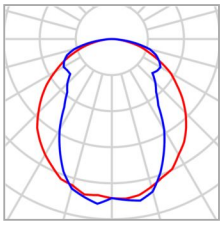
Luminaire layout plan



Guarita 01 · Térreo · Guarita 01

Luminaire layout plan





Manufacturer	Lumicenter Lighting	P	33.0 W
Article name	CAN03-E216	$\Phi_{Luminaire}$	2061 lm
Fitting	2x Fluorescente Tubular 16W		

1 x Lumicenter Lighting CAN03-E216

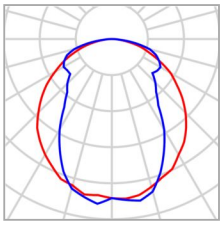
Type	Field Arrangement
1st luminaire (X/Y/Z)	0.630 m / 3.550 m / 2.800 m
X-direction	1 pcs., Centre - centre, 1.260 m
Y-direction	1 pcs., Centre - centre, 2.140 m
Arrangement	A1

X	Y	Mounting height	Luminaire
0.630 m	3.550 m	2.800 m	1

Guarita 01 · Térreo · Guarita 01

Luminaire layout plan





Manufacturer	Lumicenter Lighting	P	65.0 W
Article name	CAN03-E232	$\Phi_{Luminaire}$	4637 lm
Fitting	2x Fluorescente Tubular 32W		

1 x Lumicenter Lighting CAN03-E232

Type	Field Arrangement
1st luminaire (X/Y/Z)	1.500 m / 1.240 m / 2.800 m
X-direction	1 pcs., Centre - centre, 3.000 m
Y-direction	1 pcs., Centre - centre, 2.480 m
Arrangement	A2

X	Y	Mounting height	Luminaire
1.500 m	1.240 m	2.800 m	2

Guarita 01 · Térreo · Guarita 01

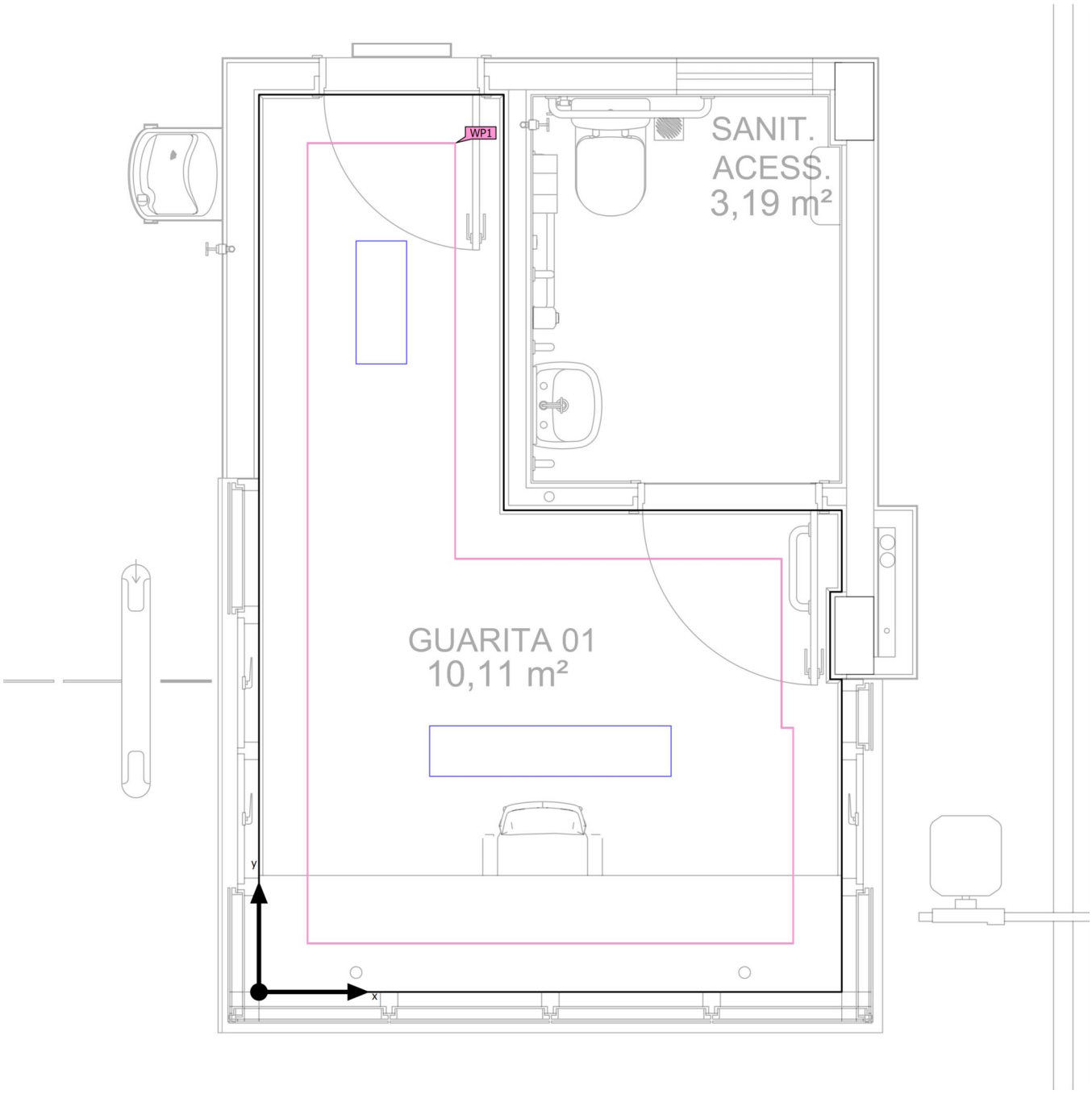
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
6698 lm	98.0 W	68.3 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Lumicenter Lighting		CAN03-E216	33.0 W	2061 lm	62.5 lm/W
1	Lumicenter Lighting		CAN03-E232	65.0 W	4637 lm	71.3 lm/W

Guarita 01 · Térreo · Guarita 01 (Light scene 1)

Calculation objects



Guarita 01 · Térreo · Guarita 01 (Light scene 1)

Calculation objects

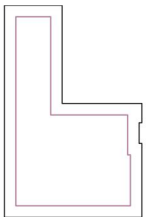
Working planes

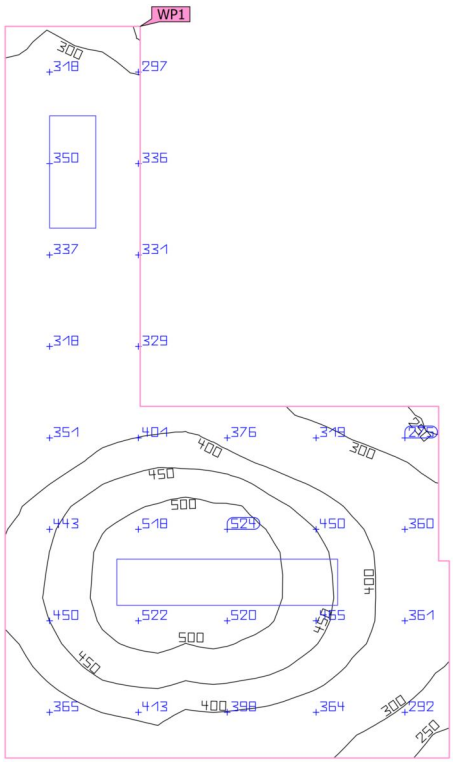
Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Guarita 01) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.250 m	391 lx (≥ 300 lx) ✓	239 lx	536 lx	0.61 (≥ 0.60) ✓	0.45	WP1

Utilisation profile: General areas inside buildings - Control rooms (11.3 Surveillance room)

Guarita 01 · Térreo · Guarita 01 (Light scene 1)

Working plane (Guarita 01)



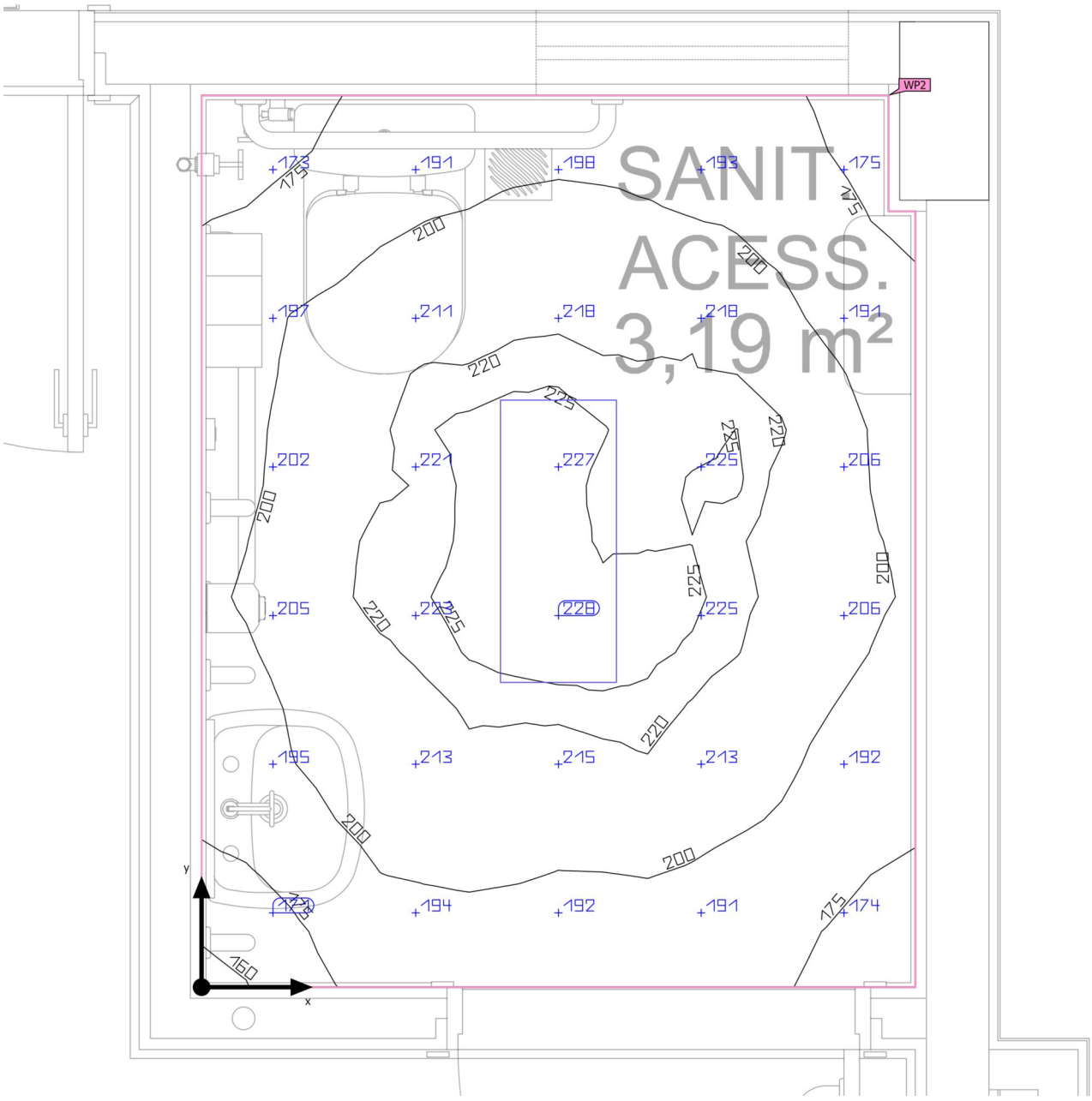


Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Guarita 01) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.250 m	391 lx (≥ 300 lx) ✓	239 lx	536 lx	0.61 (≥ 0.60) ✓	0.45	WP1

Utilisation profile: General areas inside buildings - Control rooms (11.3 Surveillance room)

Guarita 01 · Térreo · Sanit. Acess. (Light scene 1)

Summary



Ground area	3.18 m²	Clearance height	2.550 m
Reflection factors	Ceiling: 70.0 %, Walls: 70.0 %, Floor: 20.0 %	Mounting height	2.550 m
		Height Working plane	0.000 m
Maintenance factor	0.80 (fixed)	Wall zone Working plane	0.000 m

Guarita 01 · Térreo · Sanit. Acess. (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	203 lx	≥ 100 lx	✓	WP2
	U_o (g_1)	0.78	≥ 0.40	✓	WP2
Energy estimation(2)	Consumption	63.5 kWh/a	max. 150 kWh/a	✓	
Space	Lighting power density	10.36 W/m²	–		
		5.10 W/m²/100 lx	–		

(1) Based on a rectangular space of 2.000 m x 1.600 m and SHR of 0.25.
(2) Calculated using DIN:18599-4.

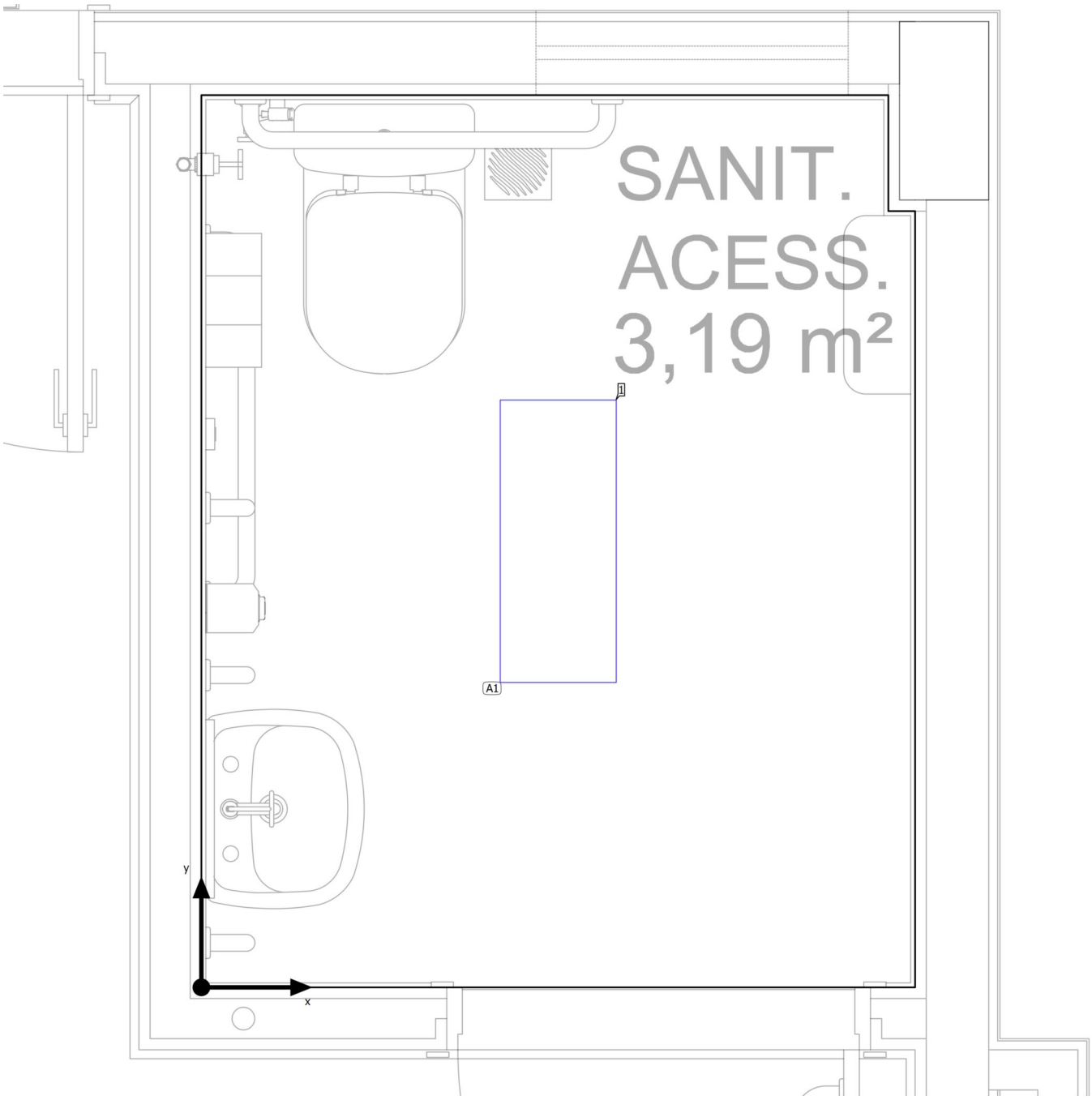
Utilisation profile: General areas inside buildings - Rest, sanitation and first aid rooms (10.2 Rest rooms)

Luminaire list

pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
1	Lumicenter Lighting		CAN03-E216	–	33.0 W	2061 lm	62.5 lm/W

Guarita 01 · Térreo · Sanit. Acess.

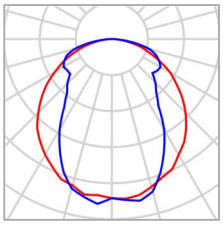
Luminaire layout plan



Guarita 01 · Térreo · Sanit. Acess.

Luminaire layout plan





Manufacturer	Lumicenter Lighting	P	33.0 W
Article name	CAN03-E216	$\Phi_{Luminaire}$	2061 lm
Fitting	2x Fluorescente Tubular 16W		

1 x Lumicenter Lighting CAN03-E216

Type	Field Arrangement
1st luminaire (X/Y/Z)	0.800 m / 1.000 m / 2.550 m
X-direction	1 pcs., Centre - centre, 1.600 m
Y-direction	1 pcs., Centre - centre, 2.000 m
Arrangement	A1

X	Y	Mounting height	Luminaire
0.800 m	1.000 m	2.550 m	1

Guarita 01 · Térreo · Sanit. Acess.

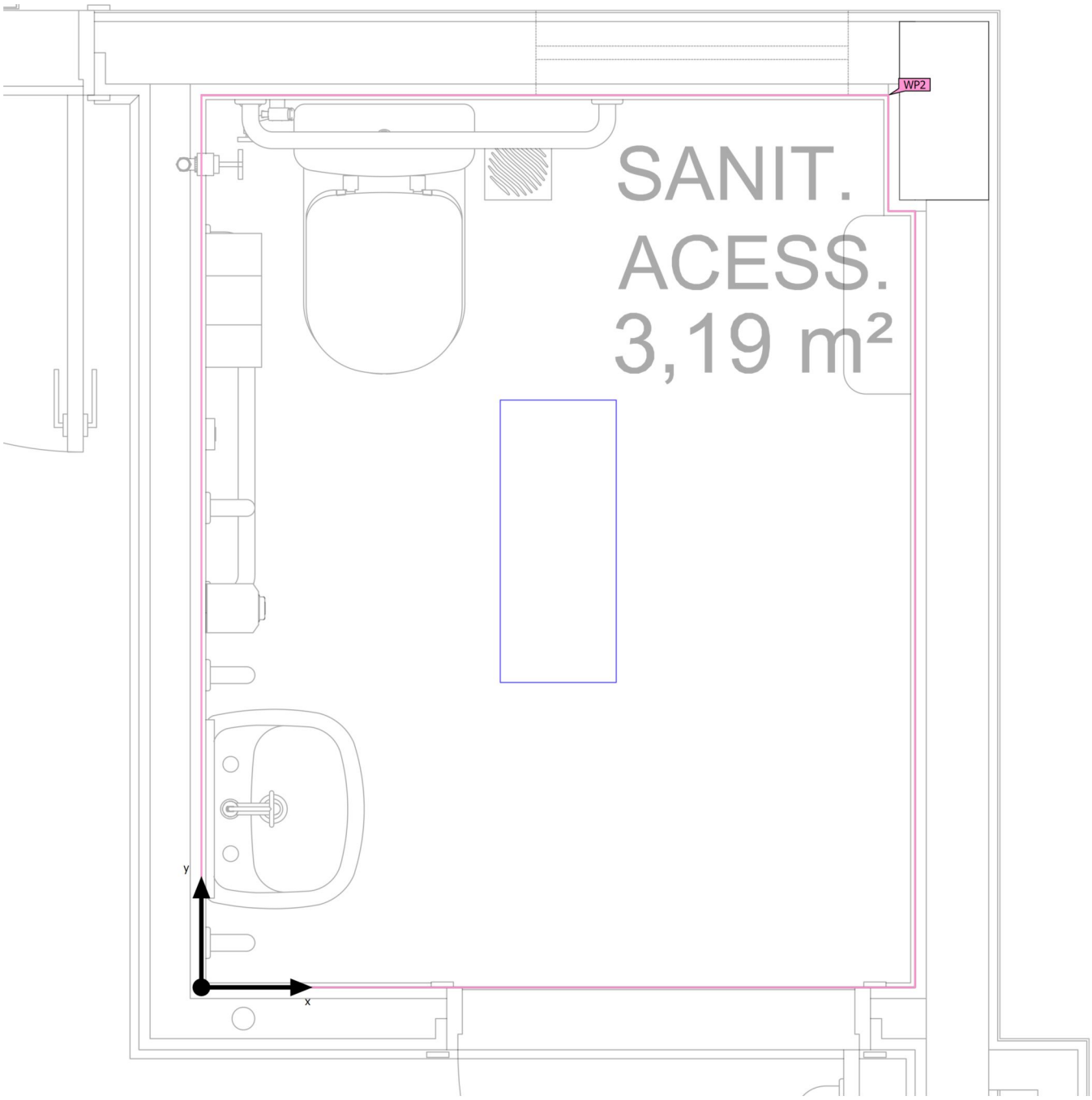
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
2061 lm	33.0 W	62.5 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Lumicenter Lighting		CAN03-E216	33.0 W	2061 lm	62.5 lm/W

Guarita 01 · Térreo · Sanit. Acess. (Light scene 1)

Calculation objects



Guarita 01 · Térreo · Sanit. Acess. (Light scene 1)

Calculation objects

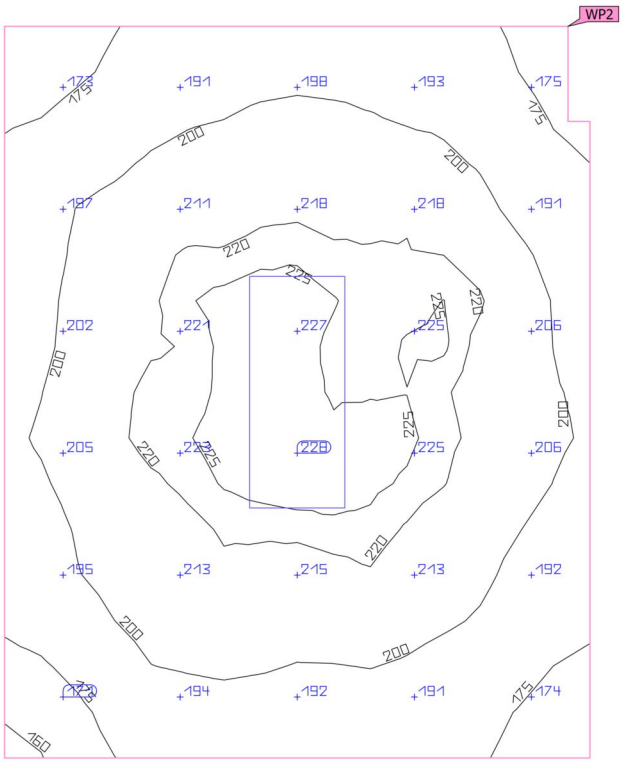
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Sanit. Acess.) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	203 lx (≥ 100 lx) ✓	159 lx	229 lx	0.78 (≥ 0.40) ✓	0.69	WP2

Utilisation profile: General areas inside buildings - Rest, sanitation and first aid rooms (10.2 Rest rooms)

Guarita 01 · Térreo · Sanit. Acess. (Light scene 1)

Working plane (Sanit. Acess.)



Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Sanit. Acess.) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	203 lx (≥ 100 lx) ✓	159 lx	229 lx	0.78 (≥ 0.40) ✓	0.69	WP2

Utilisation profile: General areas inside buildings - Rest, sanitation and first aid rooms (10.2 Rest rooms)

Guarita 02 · Térreo (Light scene 1)

Room list



Guarita 02 · Térreo (Light scene 1)

Room list

Guarita 02

P_{total}	A_{Room}	Lighting power density	$\bar{E}_{perpendicular\ (Working\ plane)}$
65.0 W	6.71 m²	9.68 W/m² = 2.52 W/m²/100 lx (Space) 13.72 W/m² = 3.56 W/m²/100 lx (Working plane)	385 lx

pcs.	Manufacturer	Article No.	Article name	P	$\Phi_{Luminaire}$
1	Lumicenter Lighting		CAN03-E232	65.0 W	4637 lm

Guarita 02 · Térreo (Light scene 1)

Calculation objects



Guarita 02 · Térreo (Light scene 1)

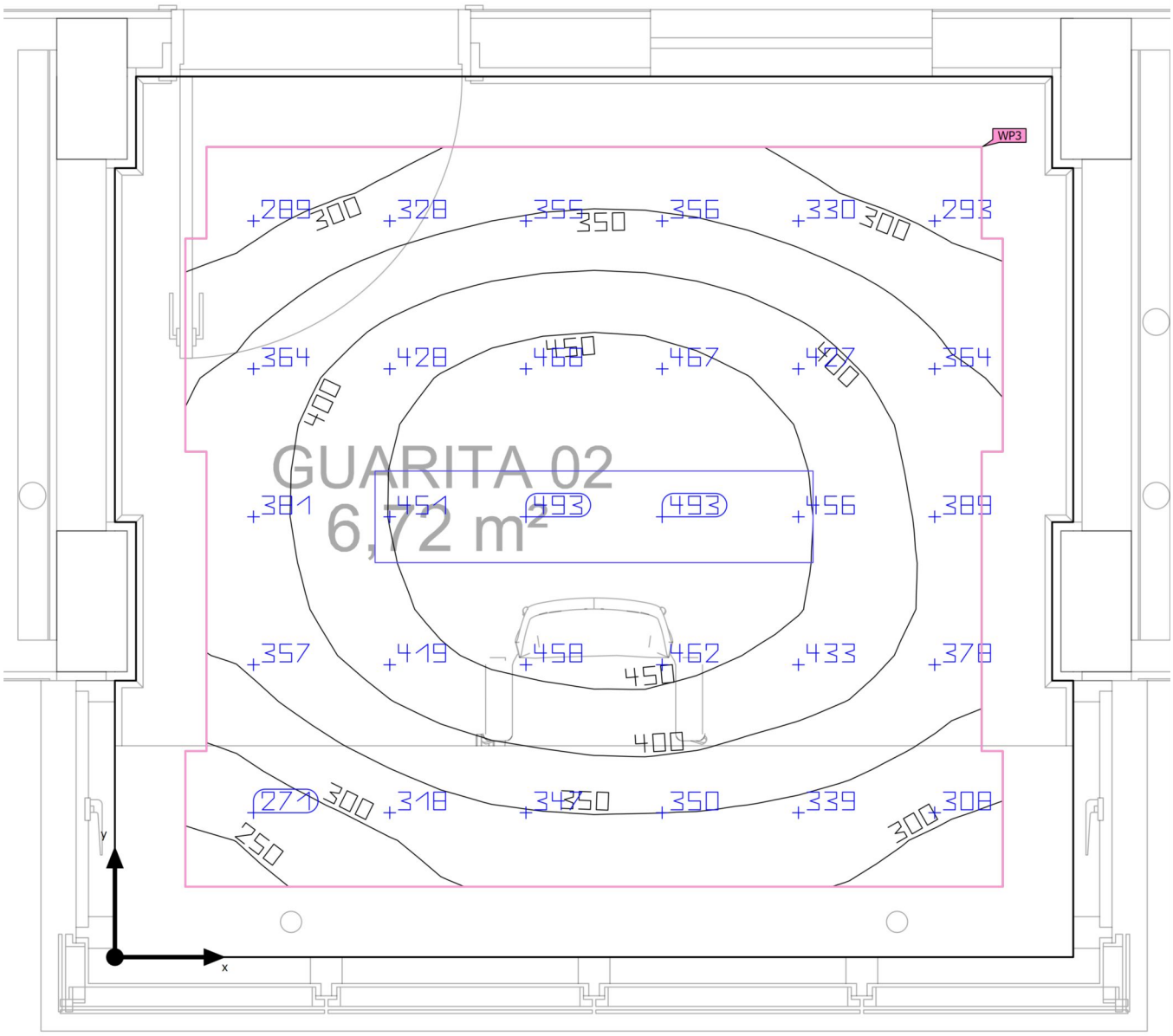
Calculation objects

Working planes

Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Guarita 02) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.200 m	385 lx (≥ 300 lx) ✓	238 lx	498 lx	0.62 (≥ 0.60) ✓	0.48	WP3

Guarita 02 · Térreo · Guarita 02 (Light scene 1)

Summary



Ground area	6.71 m²	Clearance height	2.800 m
Reflection factors	Ceiling: 70.0 %, Walls: 70.0 %, Floor: 20.0 %	Mounting height	2.800 m
		Height Working plane	0.800 m
Maintenance factor	0.80 (fixed)	Wall zone Working plane	0.200 m

Guarita 02 · Térreo · Guarita 02 (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	385 lx	≥ 300 lx	✓	WP3
	U_o (g_1)	0.62	≥ 0.60	✓	WP3
	Lighting power density	13.72 W/m²	–		
		3.56 W/m²/100 lx	–		
Energy estimation(2)	Consumption	[101 - 161] kWh/a	max. 250 kWh/a	✓	
Space	Lighting power density	9.68 W/m²	–		
		2.52 W/m²/100 lx	–		

(1) Based on a rectangular space of 2.720 m x 2.500 m and SHR of 0.25.
(2) Calculated using DIN:18599-4.

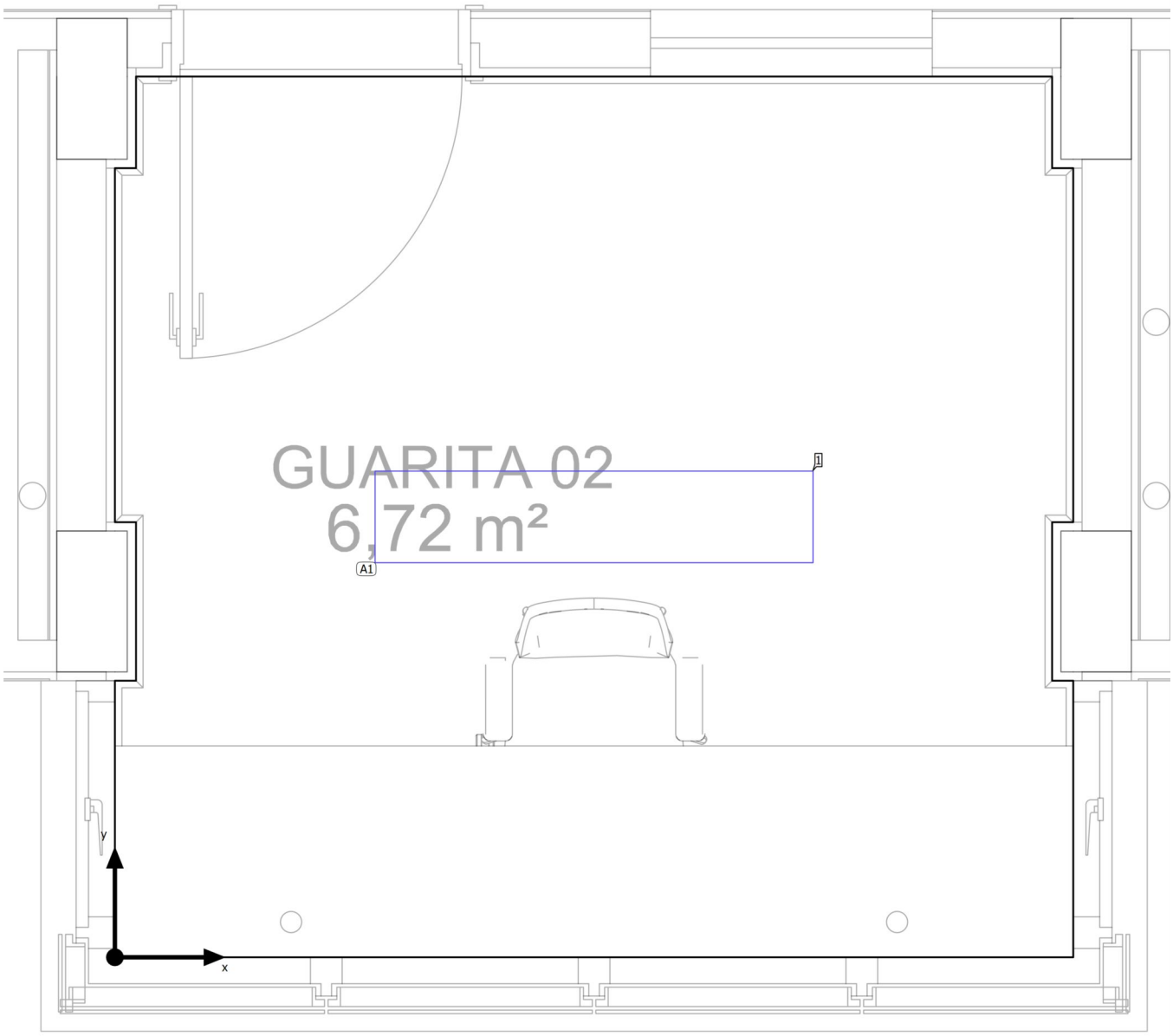
Utilisation profile: General areas inside buildings - Control rooms (11.3 Surveillance room)

Luminaire list

pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
1	Lumicenter Lighting		CAN03-E232	–	65.0 W	4637 lm	71.3 lm/W

Guarita 02 · Térreo · Guarita 02

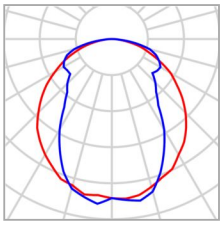
Luminaire layout plan



Guarita 02 · Térreo · Guarita 02

Luminaire layout plan





Manufacturer	Lumicenter Lighting	P	65.0 W
Article name	CAN03-E232	$\Phi_{Luminaire}$	4637 lm
Fitting	2x Fluorescente Tubular 32W		

1 x Lumicenter Lighting CAN03-E232

Type	Field Arrangement
1st luminaire (X/Y/Z)	1.360 m / 1.250 m / 2.800 m
X-direction	1 pcs., Centre - centre, 2.720 m
Y-direction	1 pcs., Centre - centre, 2.500 m
Arrangement	A1

X	Y	Mounting height	Luminaire
1.360 m	1.250 m	2.800 m	1

Guarita 02 · Térreo · Guarita 02

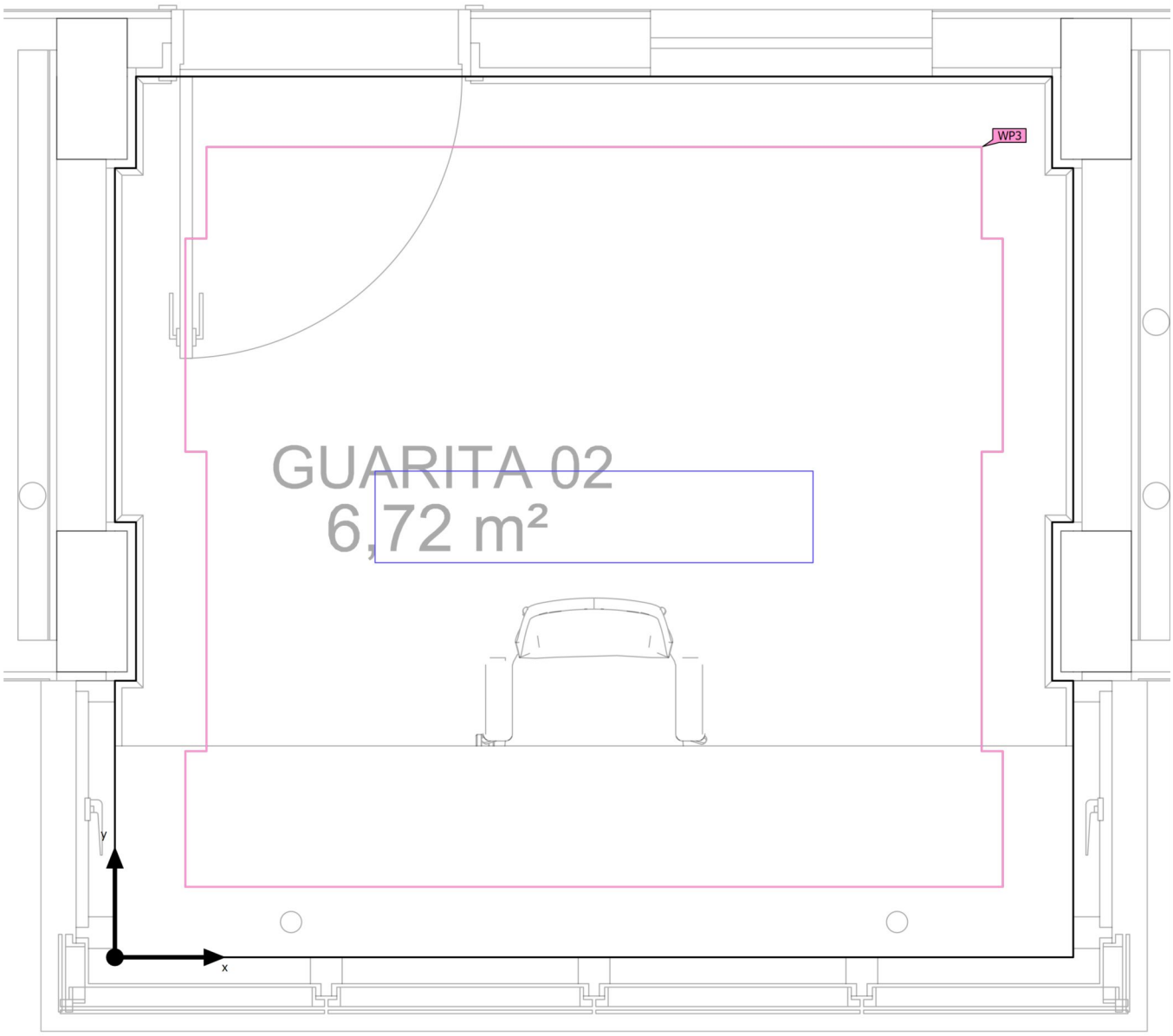
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
4637 lm	65.0 W	71.3 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Lumicenter Lighting		CAN03-E232	65.0 W	4637 lm	71.3 lm/W

Guarita 02 · Térreo · Guarita 02 (Light scene 1)

Calculation objects



Guarita 02 · Térreo · Guarita 02 (Light scene 1)

Calculation objects

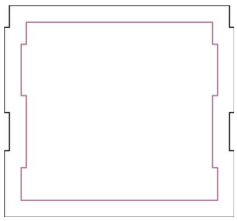
Working planes

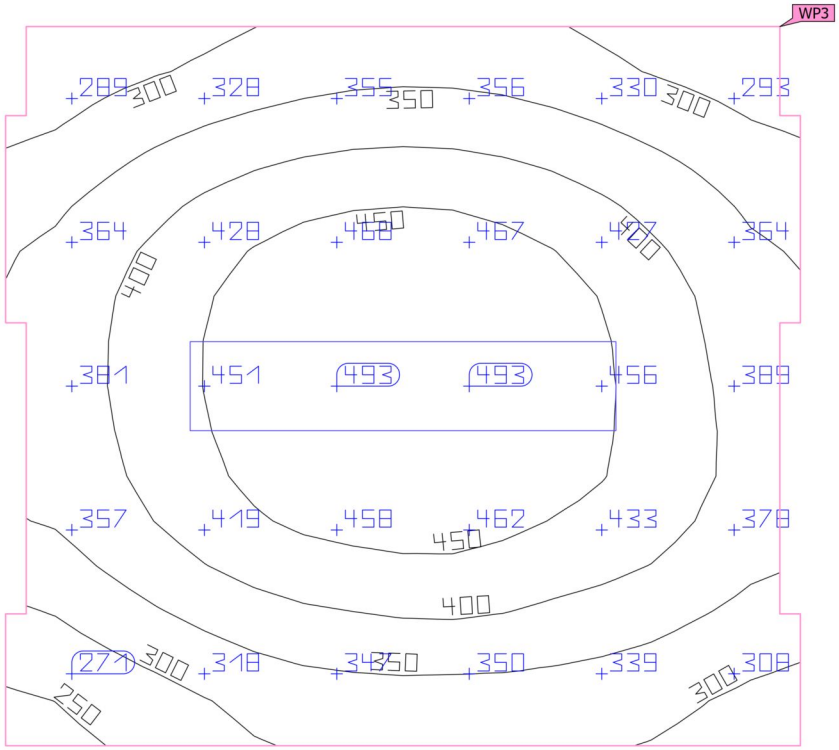
Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Guarita 02) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.200 m	385 lx (≥ 300 lx) ✓	238 lx	498 lx	0.62 (≥ 0.60) ✓	0.48	WP3

Utilisation profile: General areas inside buildings - Control rooms (11.3 Surveillance room)

Guarita 02 · Térreo · Guarita 02 (Light scene 1)

Working plane (Guarita 02)





Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Guarita 02) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.200 m	385 lx (≥ 300 lx) ✓	238 lx	498 lx	0.62 (≥ 0.60) ✓	0.48	WP3

Utilisation profile: General areas inside buildings - Control rooms (11.3 Surveillance room)

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).
Control group	A group of luminaires that are dimmed and controlled together. For each lighting scene, a control group provides its own dimming value. All luminaires within a control group share this dimming value. The control groups with their luminaires are automatically determined by DIALux on the basis of the created light scenes and their luminaire groups.
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.

Glossary

D

Daylight autonomy	Describes what percentage of the daily working time the required illuminance is met by daylight. The nominal illuminance is used from the room profile, unlike described in EN 17037. The calculation is not done in the centre of the room but at the placed sensor measuring point. A room is considered sufficiently supplied with daylight if it achieves at least 50% daylight autonomy.
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: %
Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.

E

Energy evaluation	Based on an hourly calculation procedure for daylight in indoor spaces, considering the project geometry and any existing daylight control systems. Orientation and location of the project are also considered. The calculation uses the specified system power of the luminaires to determine the energy demand. A linear relationship between power and luminous flux in the dimmed state is assumed for daylight-controlled luminaires. Times of use and nominal illuminance are determined from the usage profiles of the spaces. Switched-on luminaires that are explicitly excluded from control also consider the specified times-of-use. The daylight control systems use a simplified control logic that closes them at an outdoor horizontal illuminance of 27,500lx. The calendar year 2022 is used as a reference only. It is not a simulation of this year. The reference year is only used to assign the days of the week to the calculated results. The changeover to summer time is not considered. The reference sky type used is the average sky described in CIE 110 without direct sunlight. The method was developed together with the Fraunhofer Institute for Building Physics and is available for review by the Joint Working Group 1 ISO TC 274 as an extension of the previous annual regression-based method.
Environmental zones	The assessment of intrusive light and light immission depends on the environment of the lighting installation. Depending on the standard, 4-6 different zones are defined, ranging from highly protected areas in natural settings to urban areas, commercial zones, and industrial zones.
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: %

Glossary

G

g_1	Often also U_o (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from E_{min} to $\bar{E}$ and is required, for instance, in standards for illumination of workstations.
g_2	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of E_{min} to E_{max} 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 (lm/m^2 = 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 E_h.
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.
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.

K

k_S	The glare effect of a light source can be described by the glare metric k_S. It relates the solid angle of the glaring light source as seen from the point of immission, the ambient luminance, and the maximum allowable luminance.

Glossary

L

LENI	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193 Unit: kWh/(m^2 * a)
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/m^2 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).
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

Glossary

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 x LMF x LLMF x LSF.

O

Obtrusive light/Light immission	To protect the nocturnal environment and minimize problems for humans, flora, and fauna, it is necessary to limit obtrusive light (also known as light pollution), which can cause serious physiological and ecological issues for individuals and the environment. Light immission refers to the disturbing influence of emitted light from artificial light sources.
Operating times	The assessment of obtrusive light and light immission depends on the operating times of the lighting installation. Depending on the standard, 1-3 different operating times are specified. In the absence of specific details, an operating time between 06:00 and 22:00 can be assumed.

P

P	(Engl. power) Electric power consumption Unit: watt Abbreviation: W

Glossary

R

$R_{(UG)}$ max	Measure of the psychological glare in indoor spaces. In addition to the luminance of luminaires, the level of the $R_{(UG)}$ value also depends on the observer position, the viewing direction and the ambient luminance. The calculation is made according to the table method, see CIE 117. Among other things, EN 12464-1:2021 specifies maximum permissible $R_{(UG)}$- values $R_{(UGL)}$ for various indoor workplaces.
R_{DLO}	The ratio of the luminous flux emitted below the horizontal plane to the total lamp luminous flux of a luminaire or lighting installation in its operational position.
R_G	The glare directly caused by luminaires of an outdoor lighting installation is determined using the CIE Glare Rating (RG) method. To calculate this, the equivalent veiling luminance of the surroundings is needed. There are four options for determining this: • An exact calculation according to CIE 112, based on the scene area. • A simplified method according to EN 12464-2, based on the scene area. • Using a custom calculation area to determine the equivalent veiling luminance. • Specifying a fixed value for easy comparability.
R_{UF}	upward flux ratio The ratio of the luminous flux emitted directly or reflected above the horizontal plane to the luminous flux that cannot be avoided under ideal conditions to achieve the illuminance level on a deliberately illuminated area.
R_{UL}	upward light ratio The ratio of the luminous flux emitted above the horizontal plane to the luminous flux of a luminaire or lighting installation in its operational position. The luminaire efficiency is considered in this calculation.
R_{ULO}	upward light output ratio The ratio of the luminous flux emitted above the horizontal plane to the total lamp luminous flux of a luminaire or lighting installation in its operational position.
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.
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).
RUG (max)	(unified glare rating) Measure for the psychological glare effect in interiors. In addition to luminaire luminance, the RUG 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 RUG values for various indoor workplaces.

Glossary

RUG observer	Calculation point in the room, for the DIALux the RUG 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).

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.

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.
Working plane	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.