



## **Vivaldi tower**

### **Earnst Young headquaters, Foster + Partners**

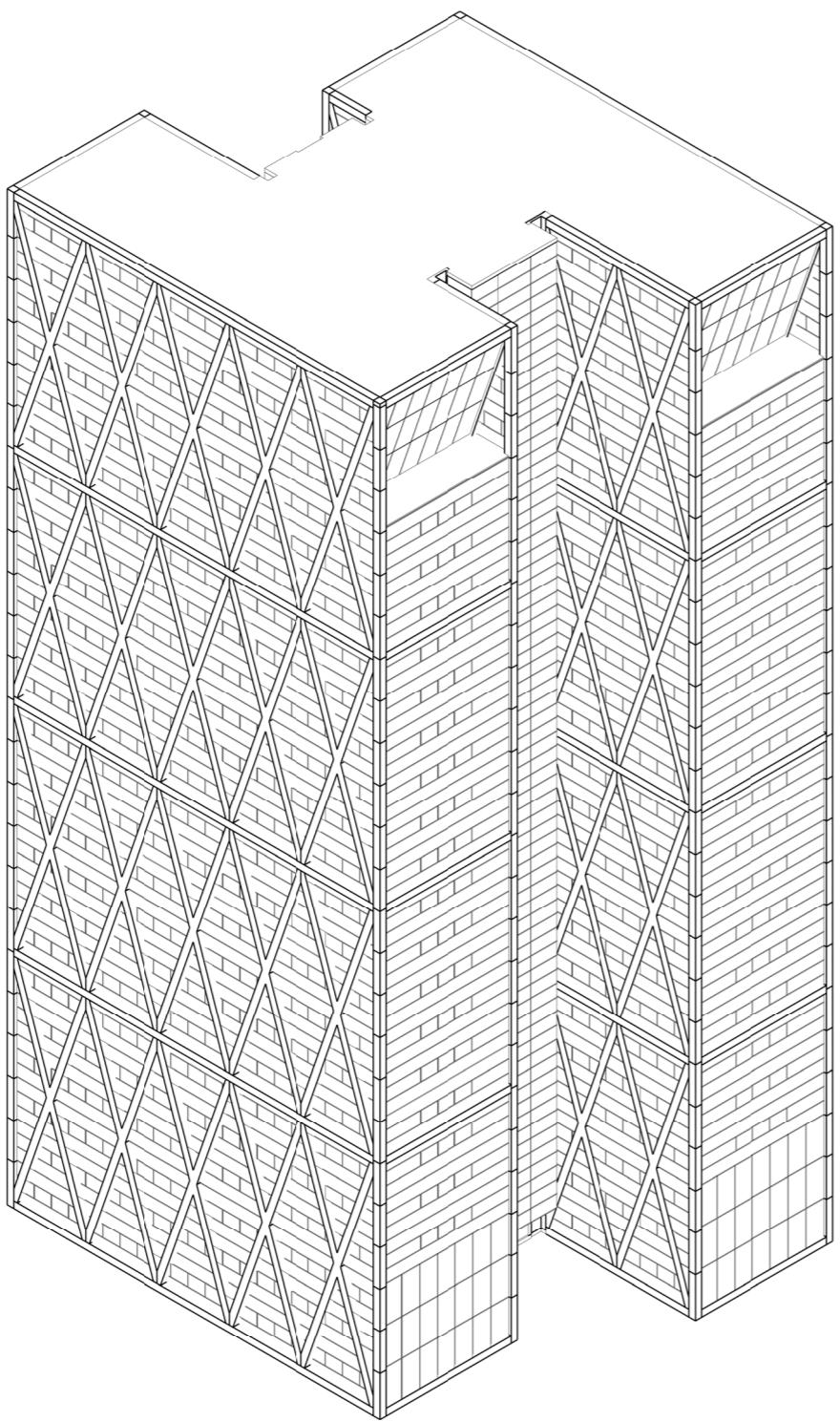
**Name :** Suppasilp Charoenkraikamol

**CUID :** 6538121425

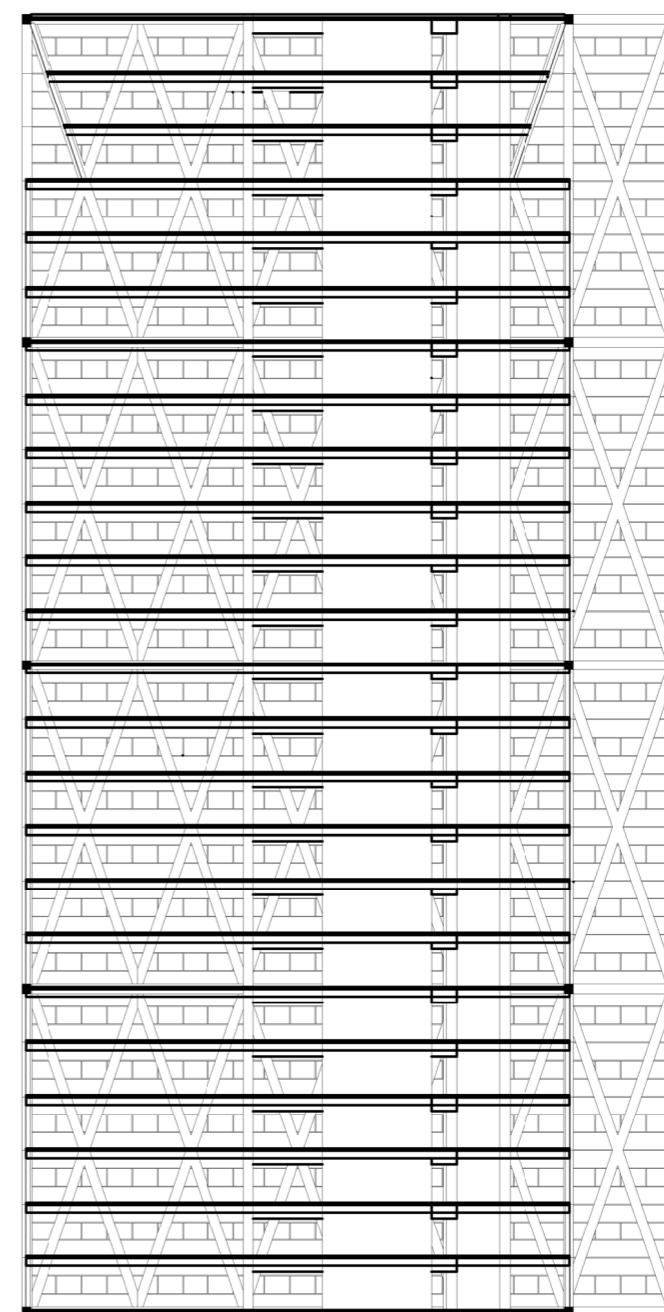
**Email :** suppasilp.c@cuinda.com

**Submission date :** 23/04/2025

# Drawing



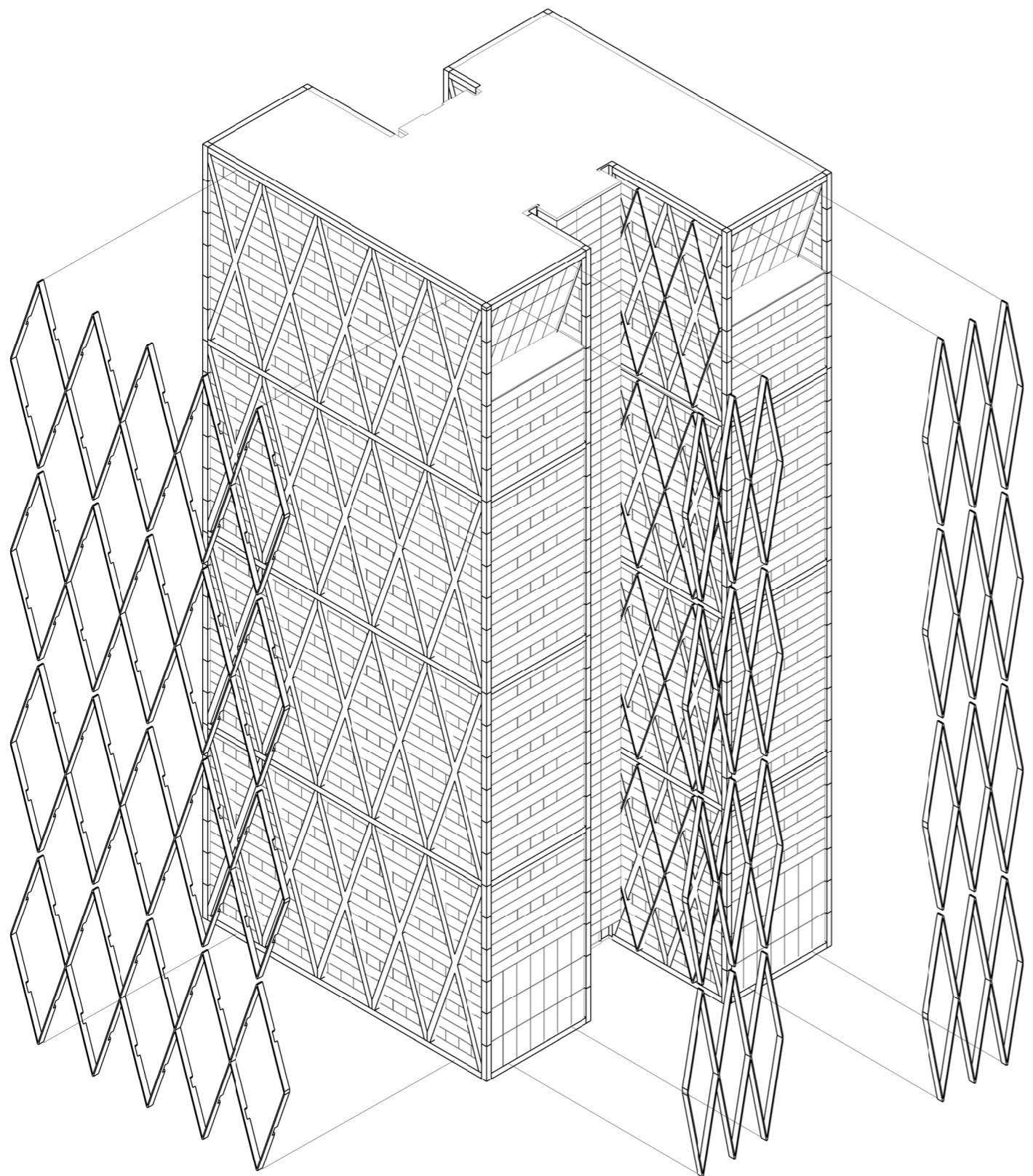
Isometric view



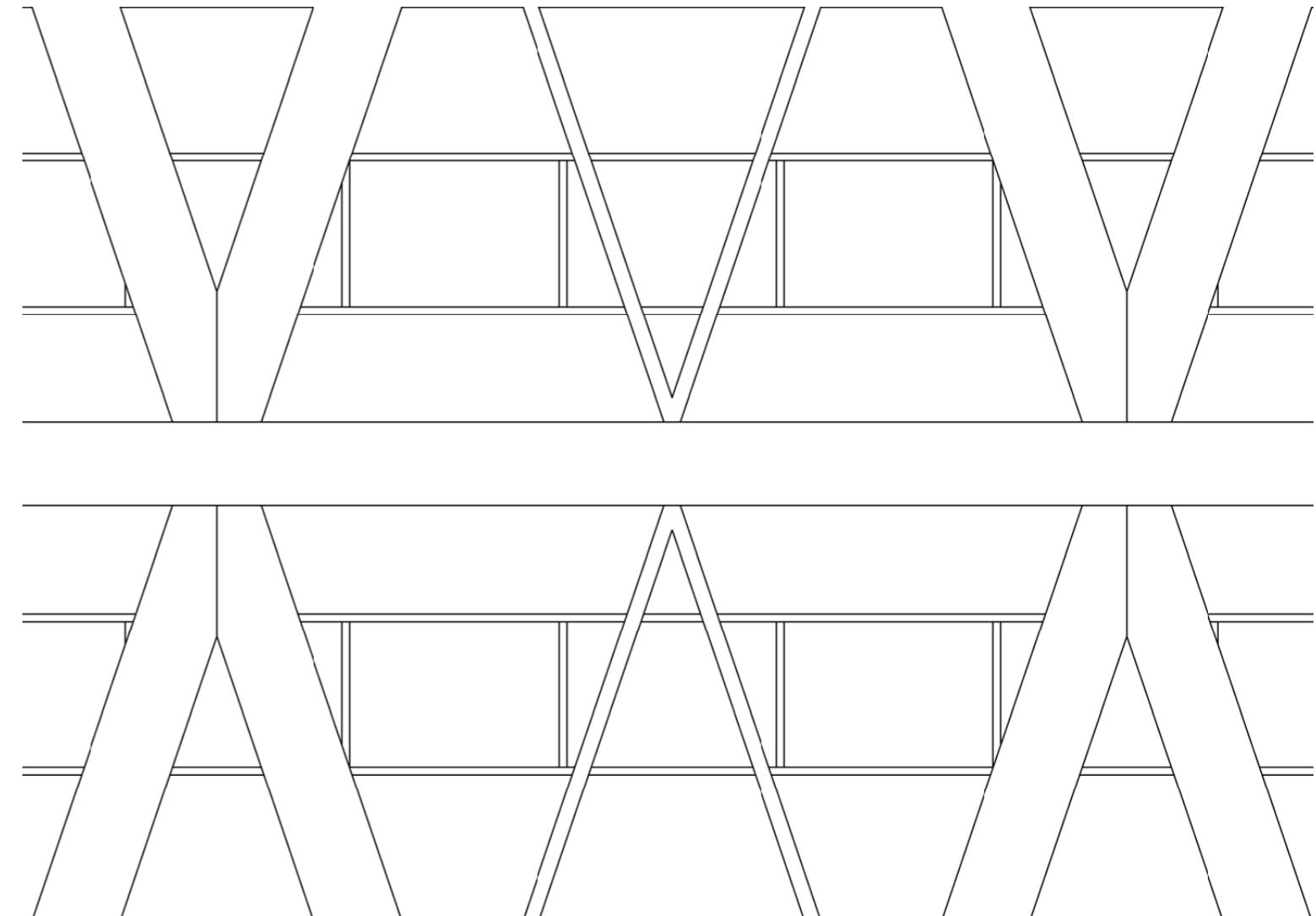
Section

0 3.13 6.25 12.5 25 m

## Facade design



Exploded isometric view

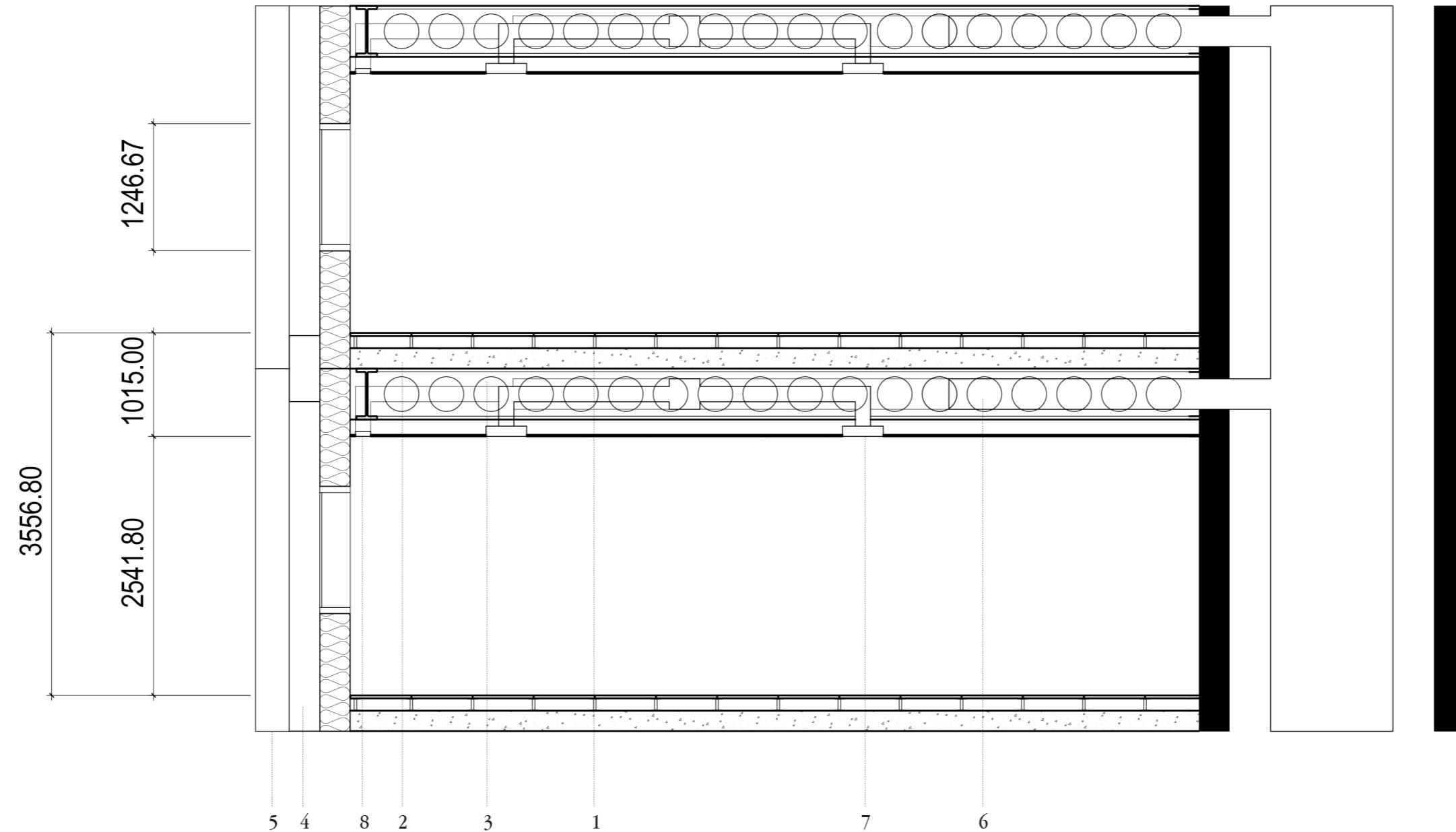


Facade elevation

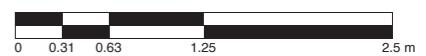


## Detailed section

1. Raised floor system
2. Precast concrete floor panels
3. Steel beam drilled for services
4. Curtain walling system
5. Facade system - Steel rectangular tube fixed to existing structure with aluminium framing
6. Chilled supply air
7. Diffuser
8. Linear diffuser



Detailed section



## Parameter

Glazing to wall percentage

Overall wall area : 168 sqm.

Glazing area : 52.5 sqm.

Glazing to wall percentage :

31.25%

## Transmittance details

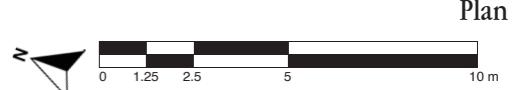
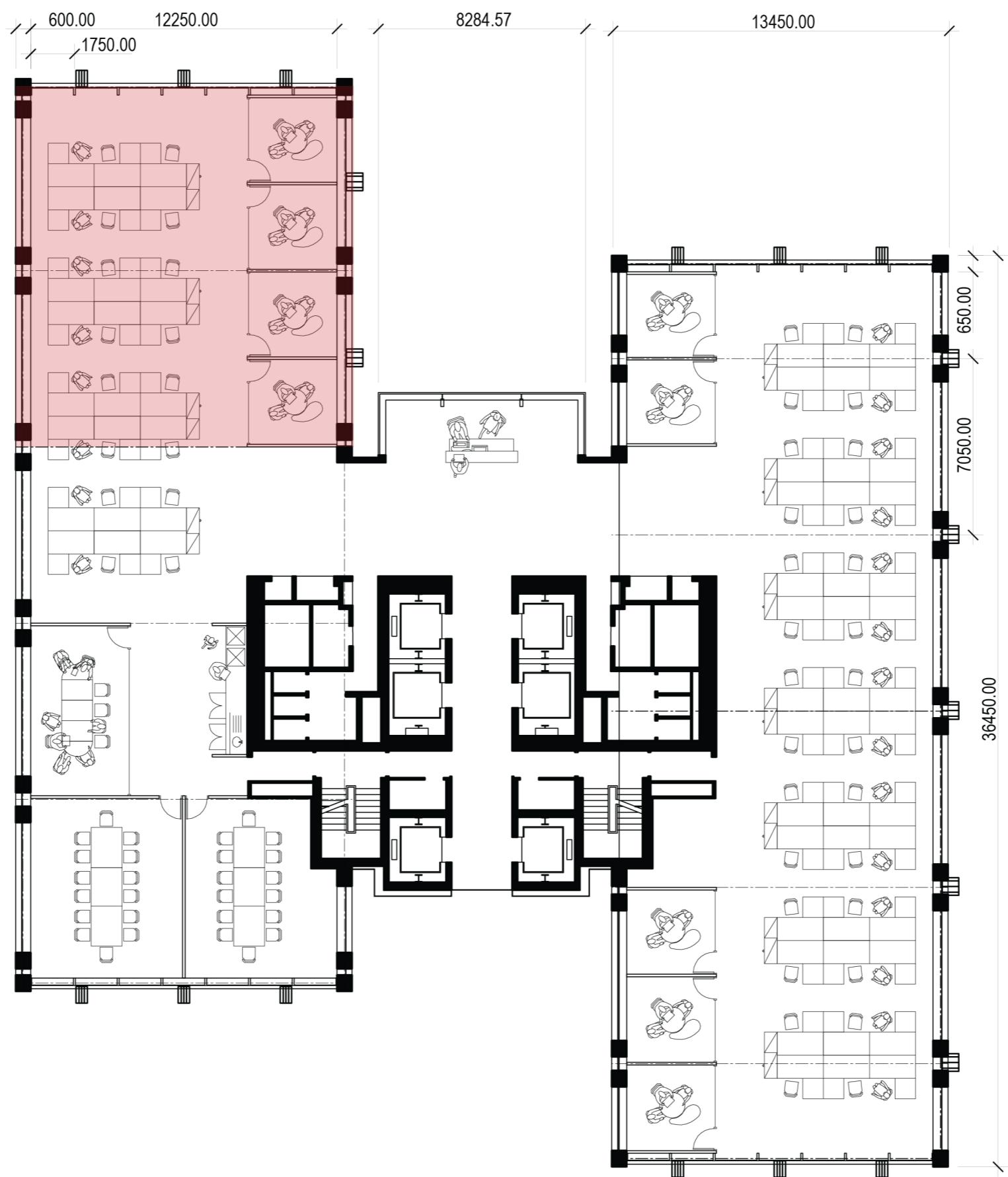
Floor : Concrete, reflectance 0.4

Ceiling : Concrete, reflectance 0.4

Wall : Concrete, reflectance 0.4

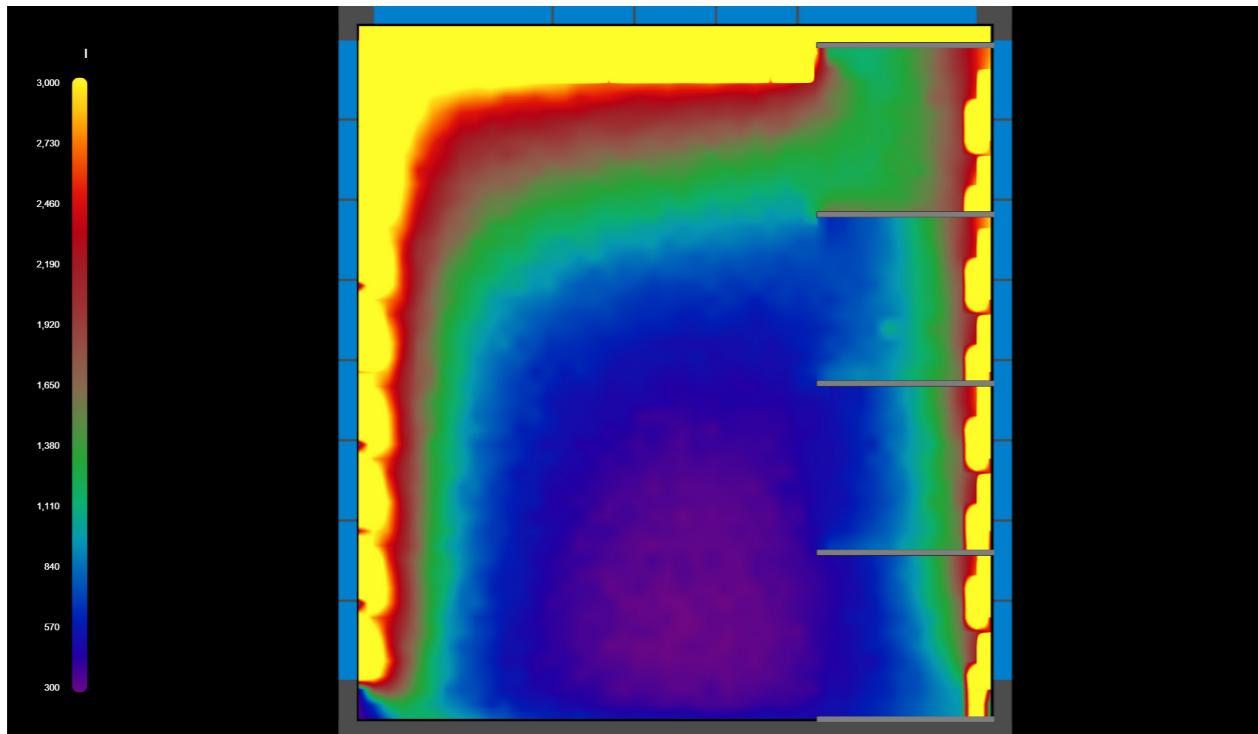
Roof : Plastic, reflectance 0.2

Facade : Glass, reflectance 0.6

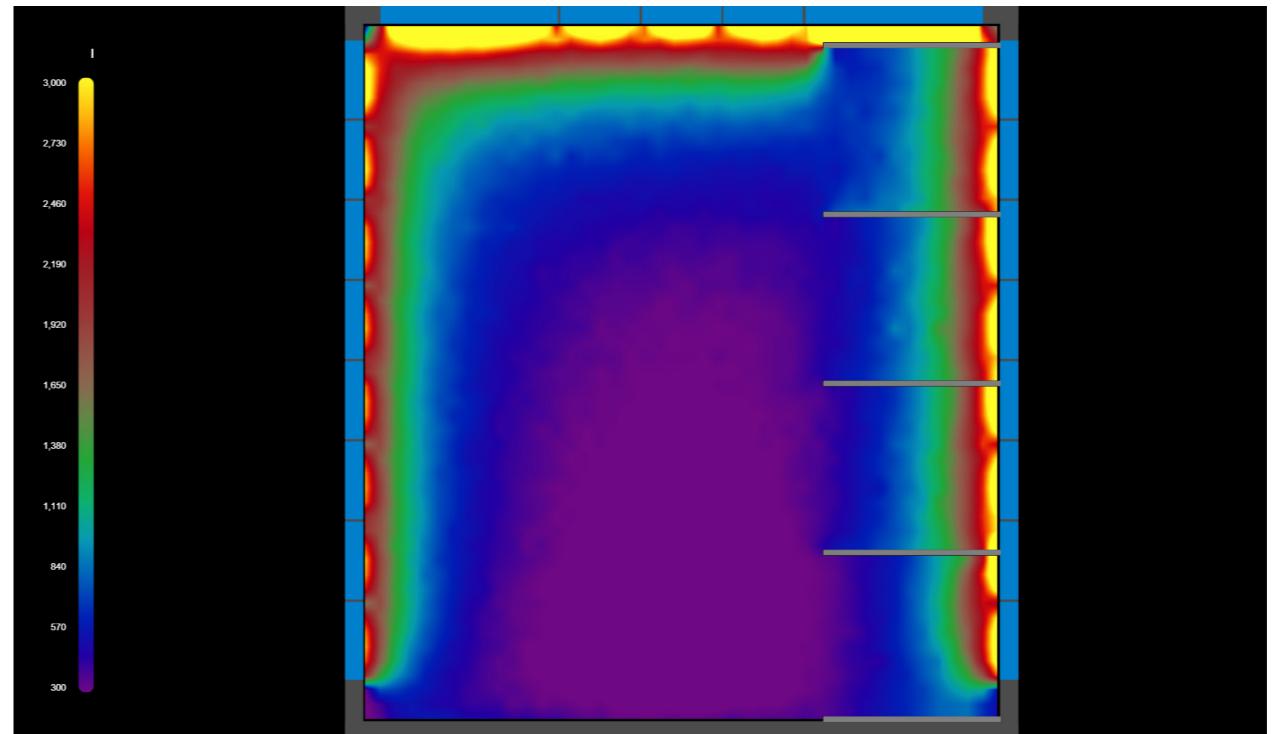


Plan

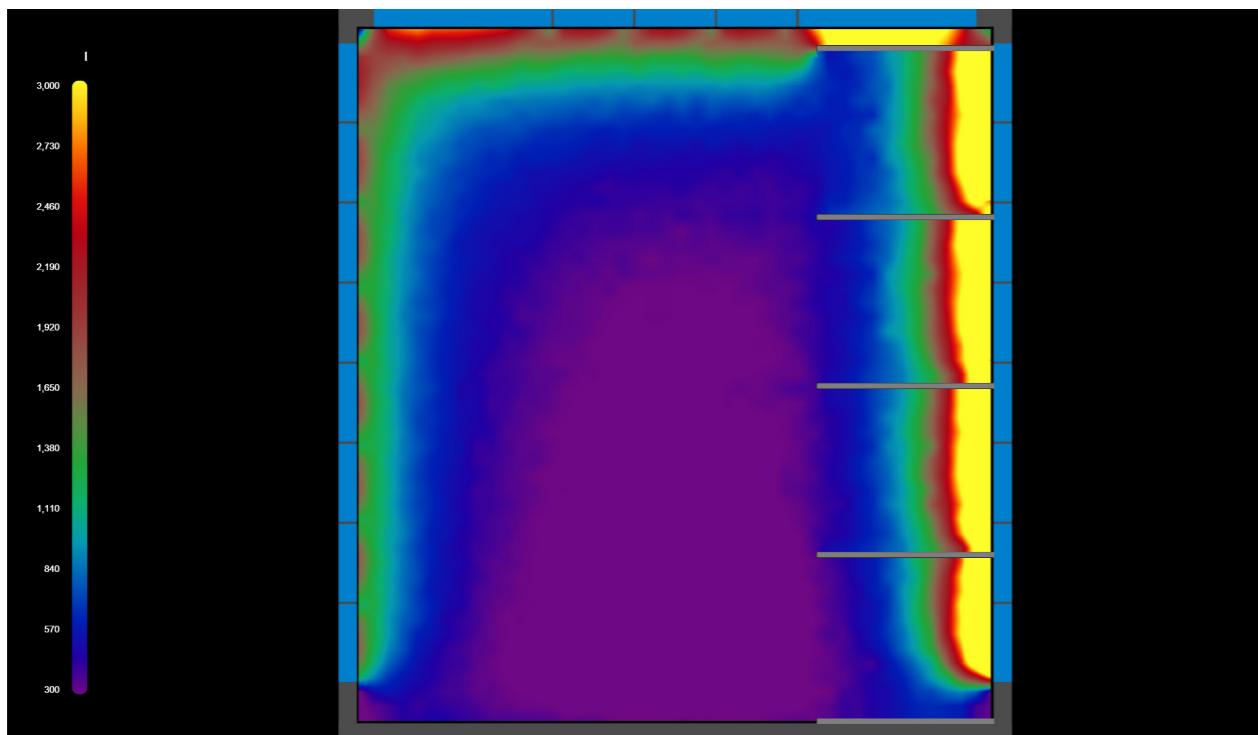
## Existing, plan



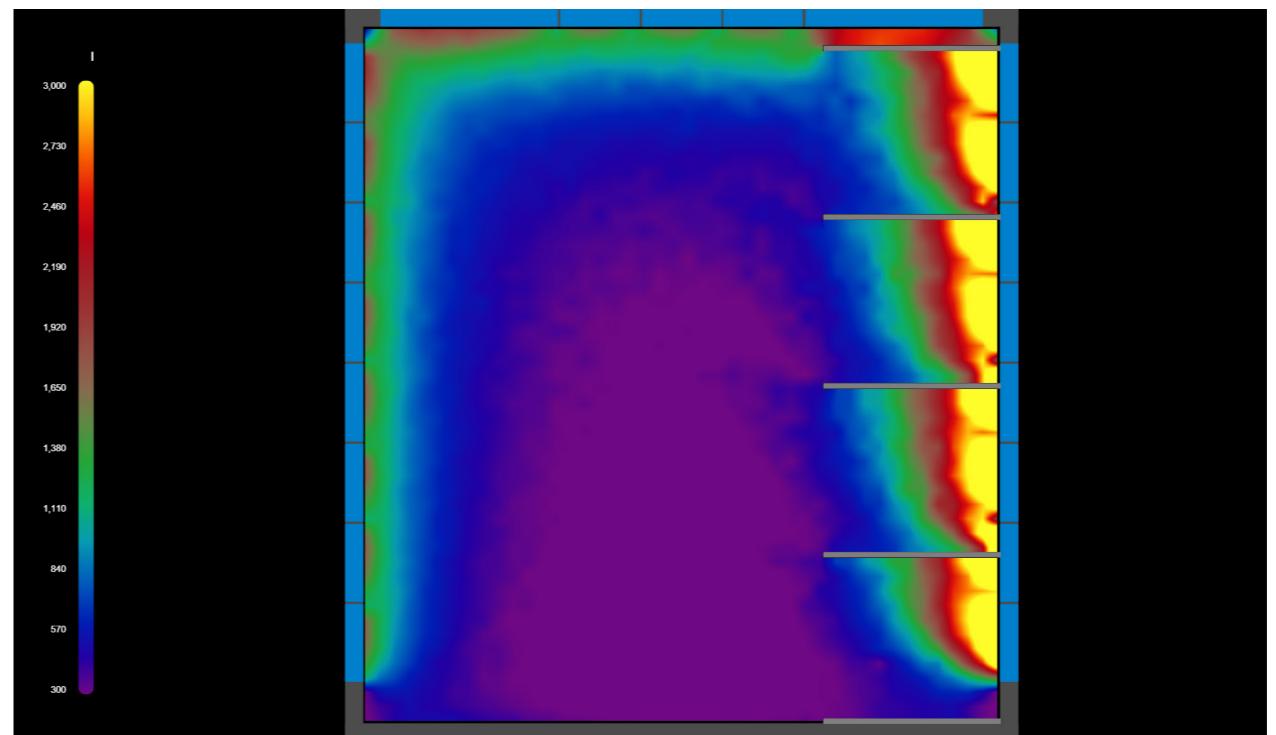
21 march, 9.00



21 march, 12.00



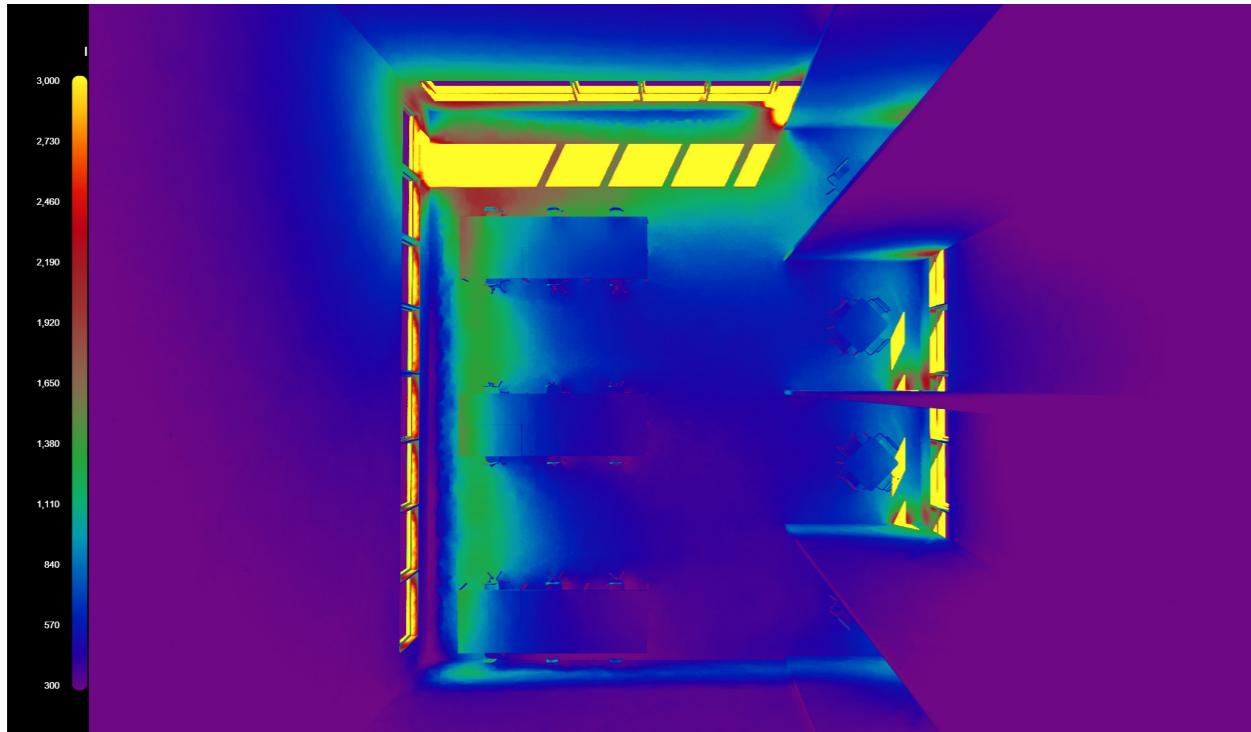
21 march, 15.00



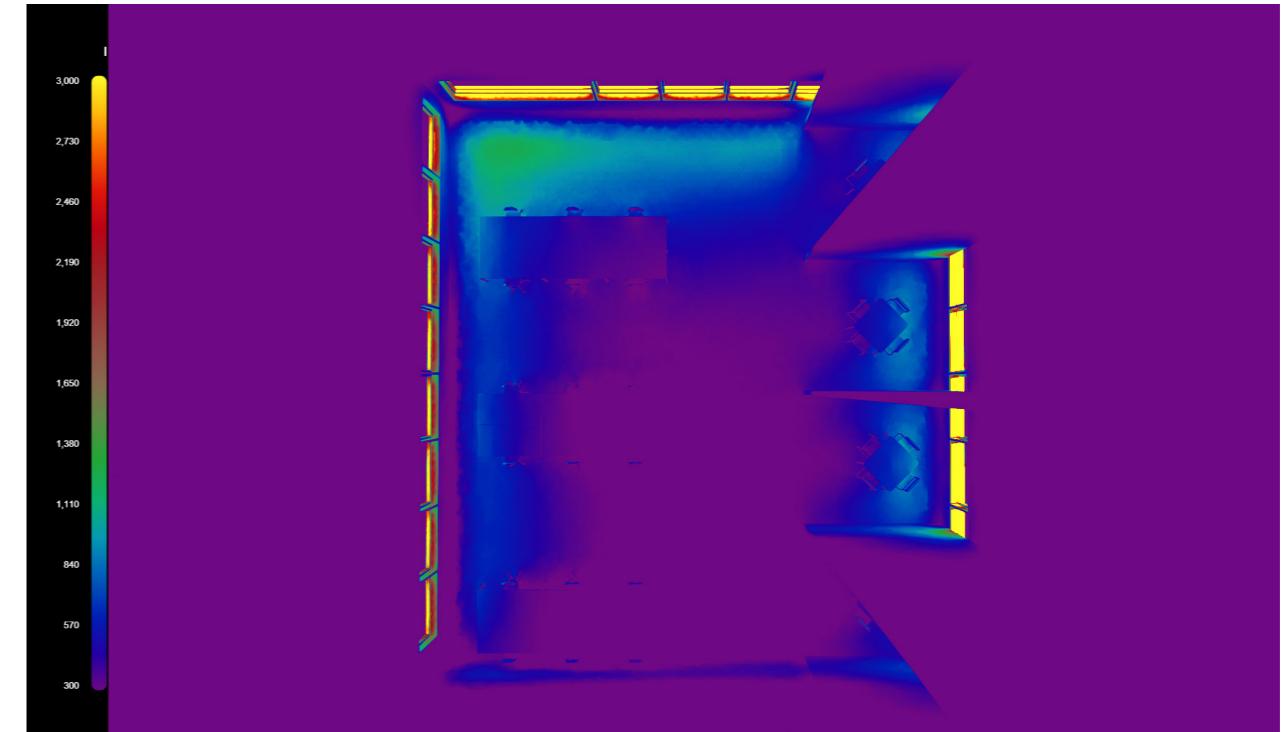
21 march, 17.00



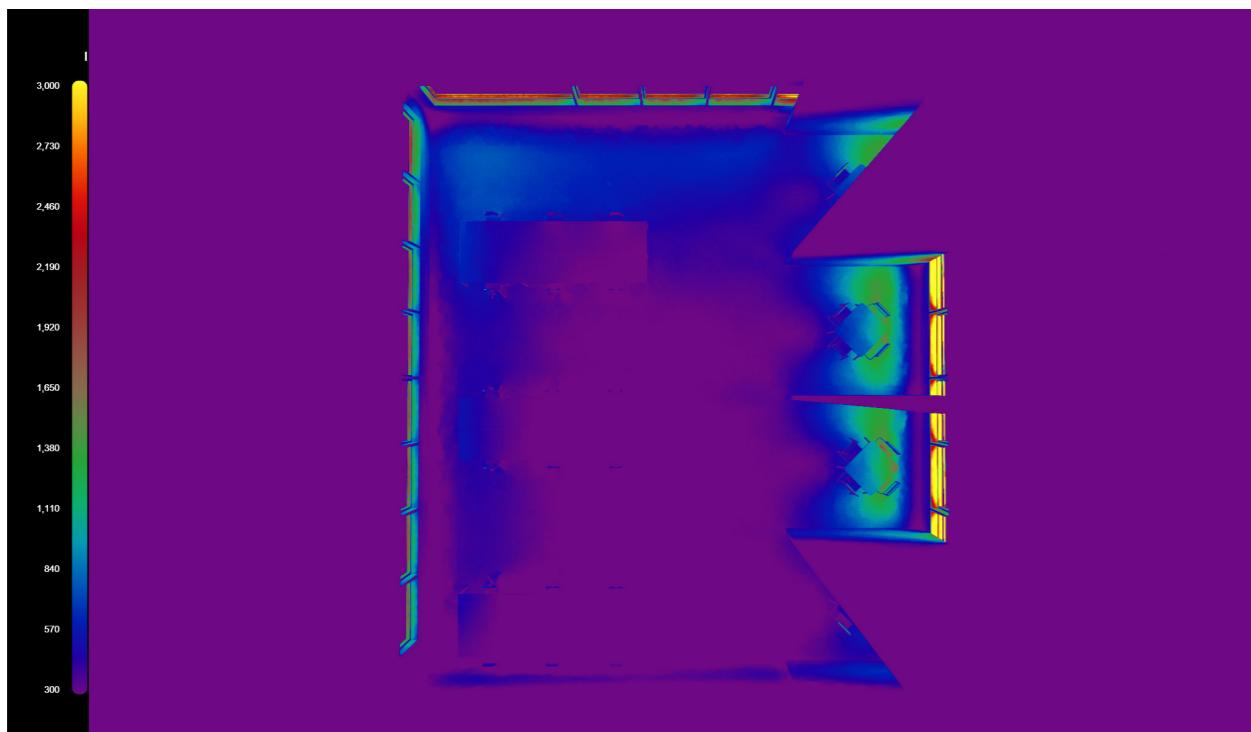
## Existing, bird view



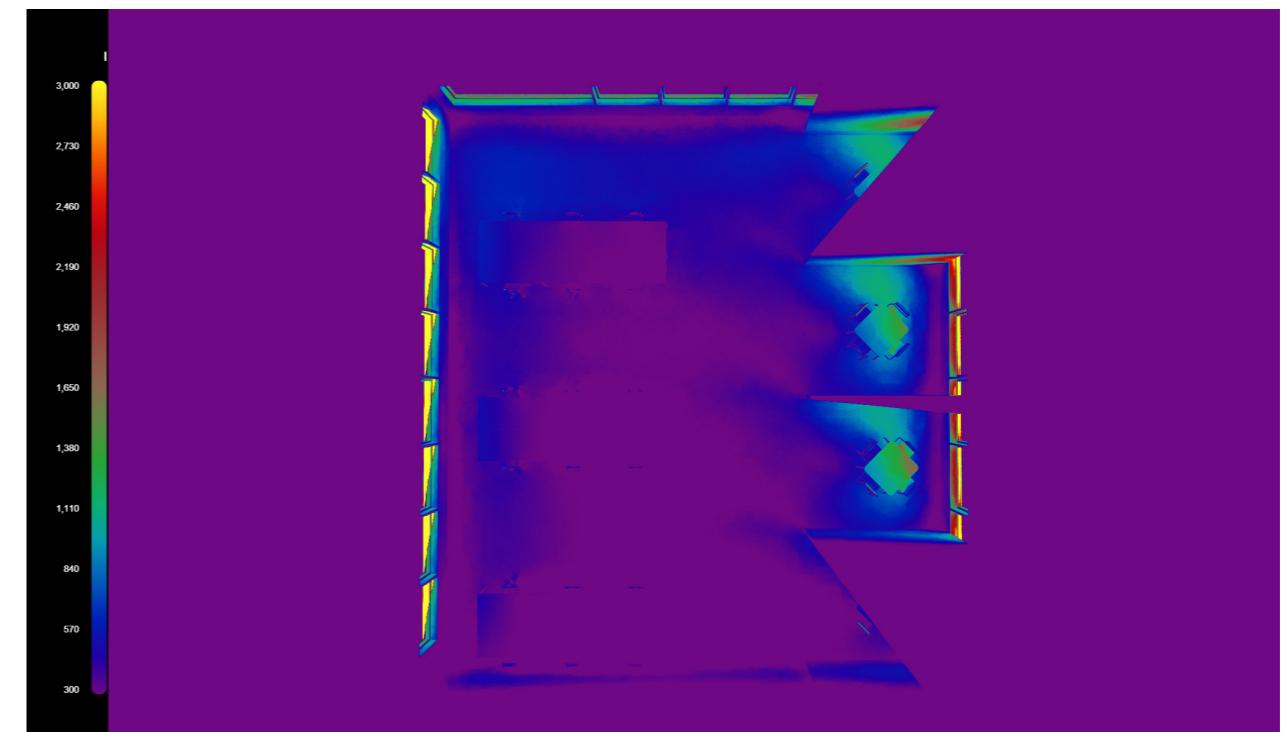
21 march, 9.00



21 march, 12.00



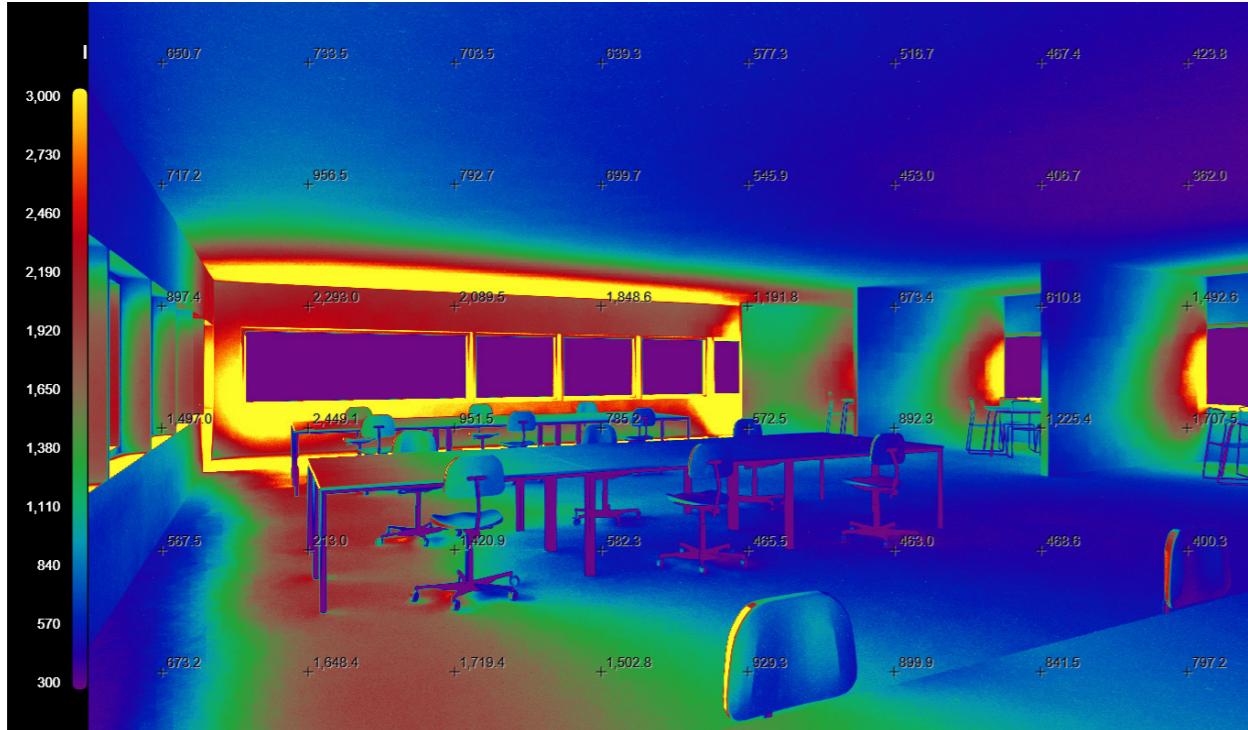
21 march, 15.00



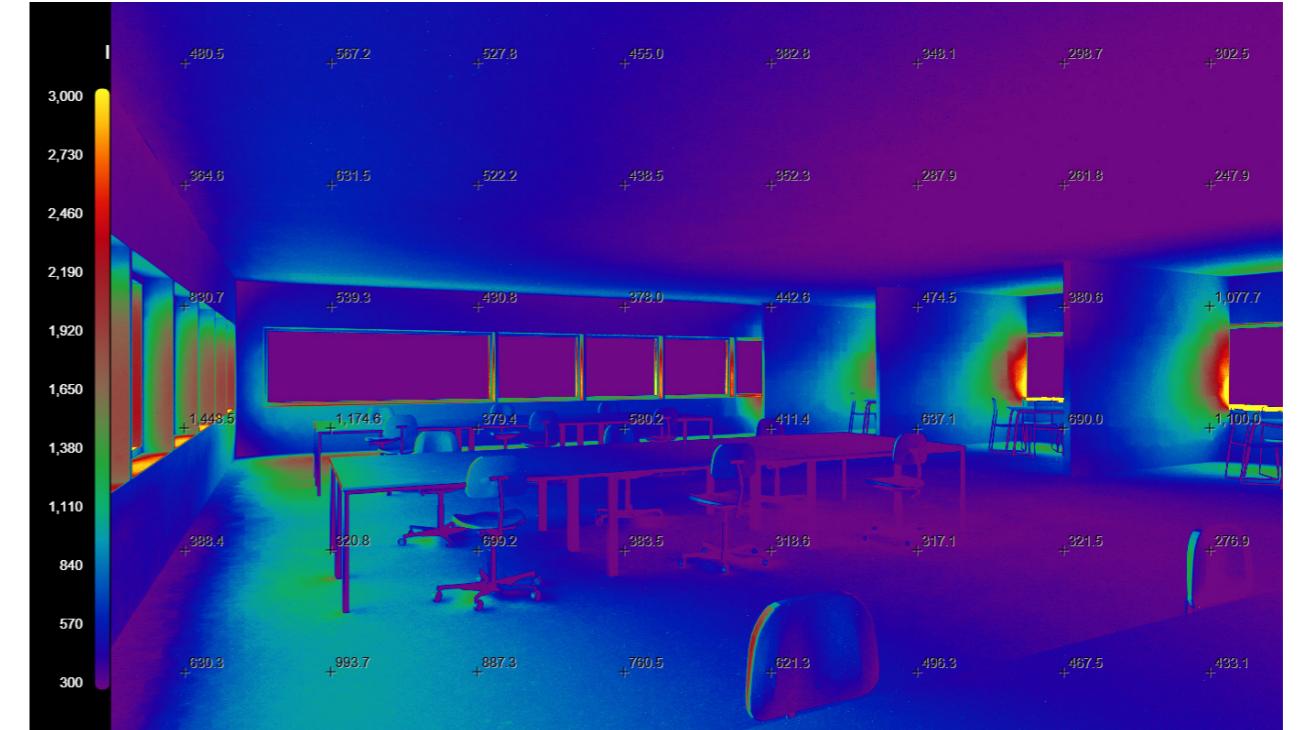
21 march, 17.00



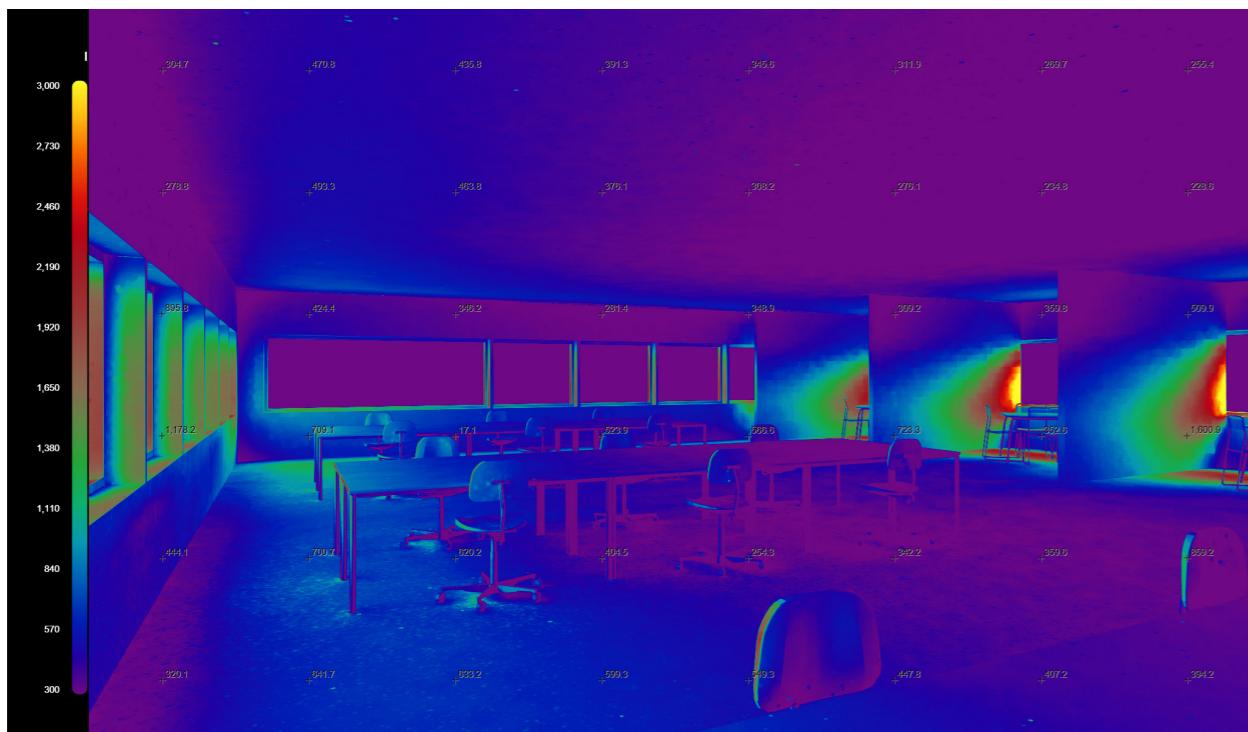
## Existing, perspective



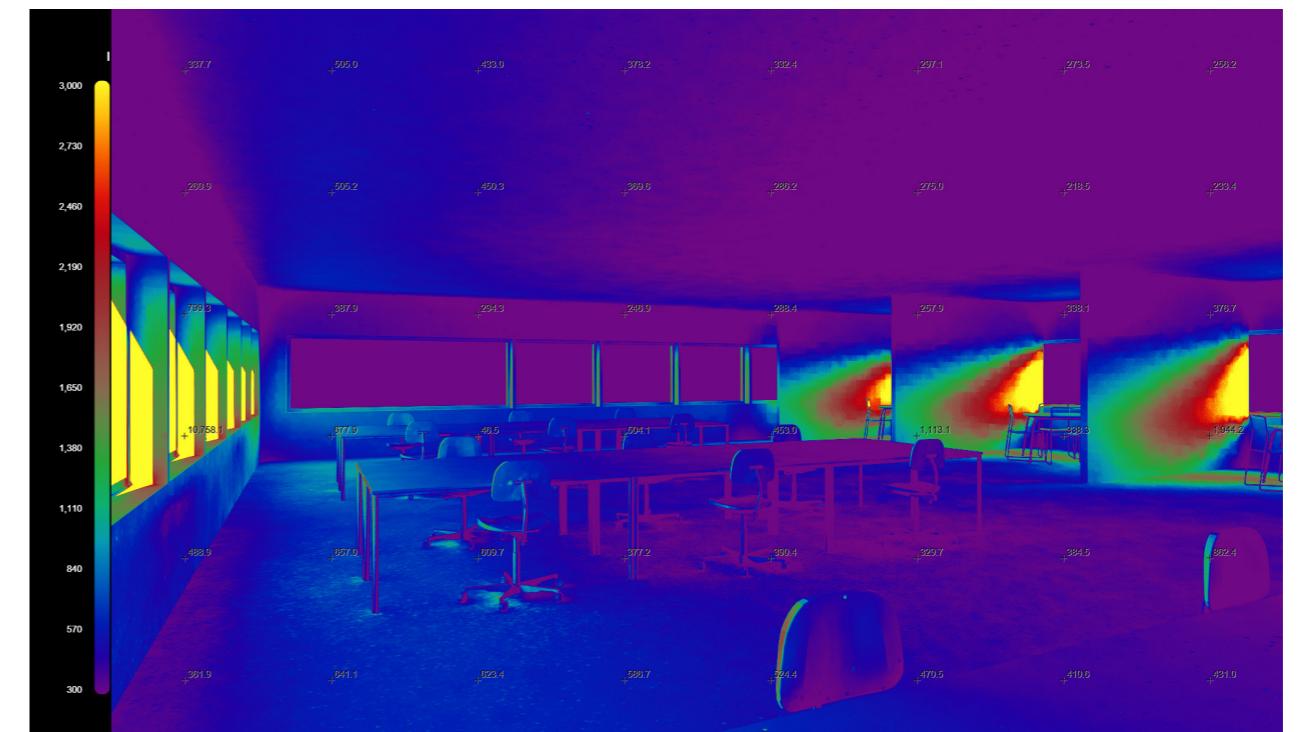
21 march, 9.00



21 march, 12.00



21 march, 15.00

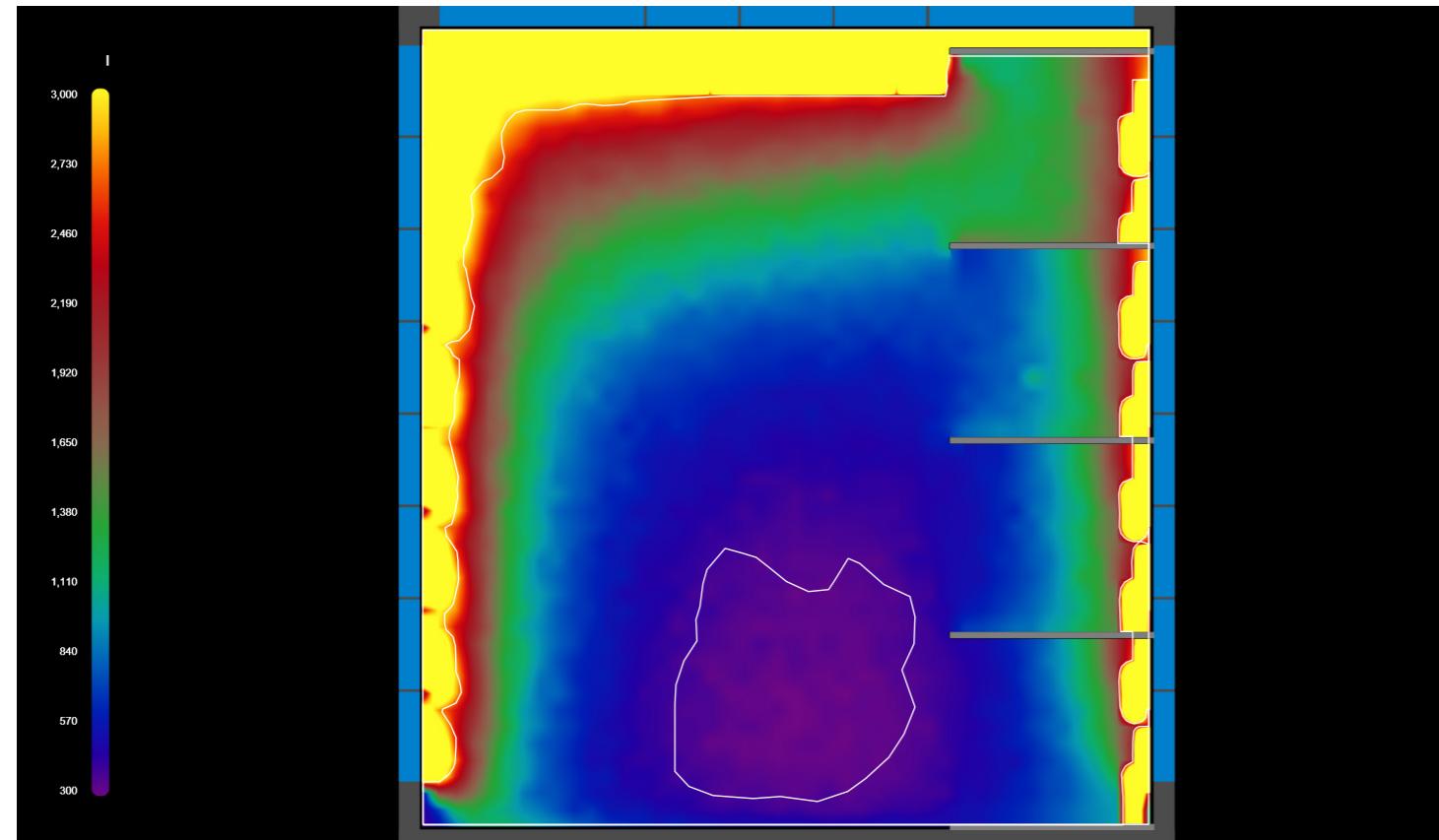


21 march, 17.00

## Daylight access area calculation

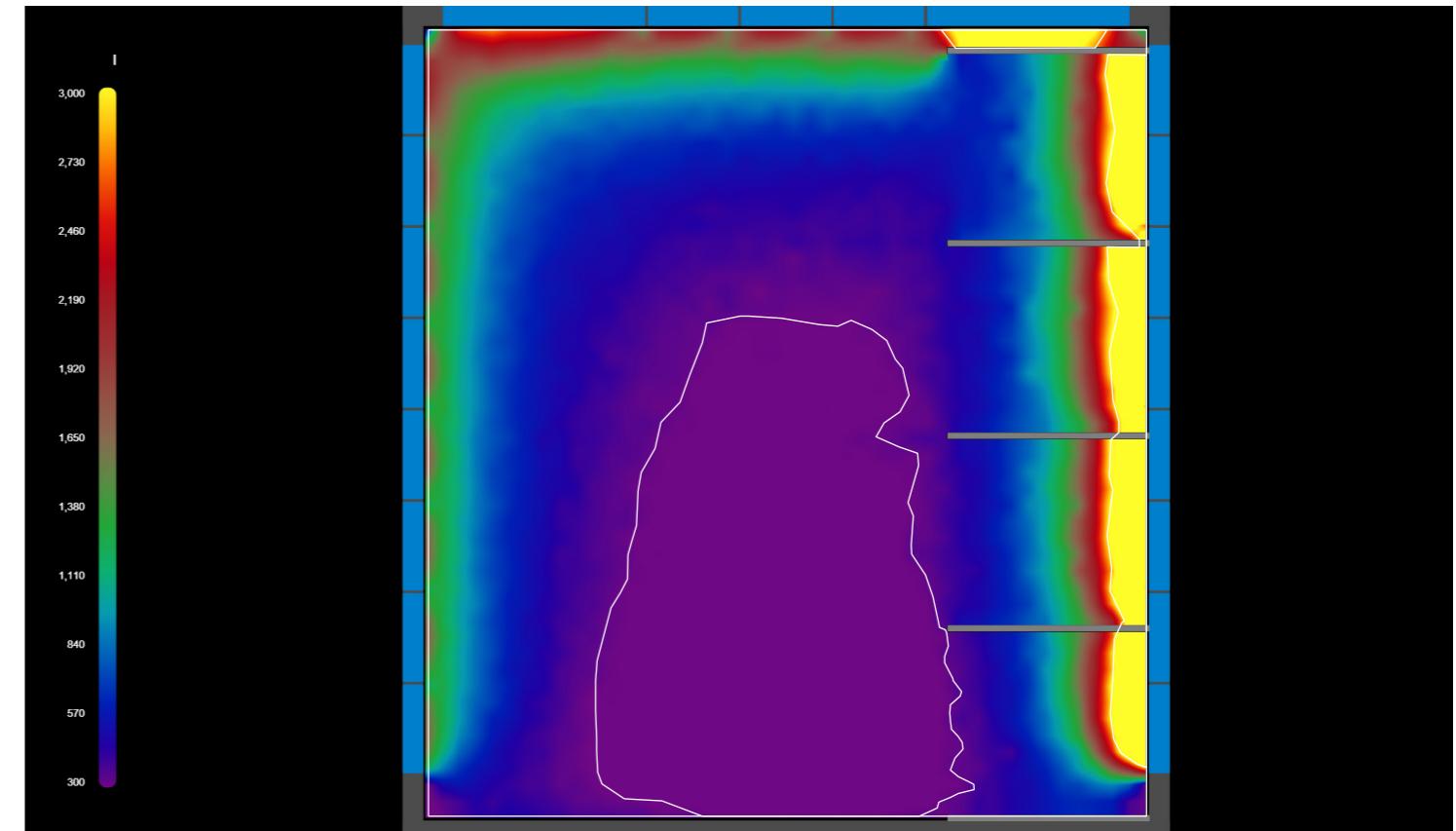
### Summary of the existing design

The existing design already achieves a good daylight percentage, as the building is a high-quality high-rise office. The proposal will focus on enhancing the current design to improve sustainability and further increase the daylight percentage.



21 march, 9.00

Overall area : 170 sqm.  
Daylight access (300-3000 lux) area : 131 sqm.  
Percentage of daylight access area to overall area : 77.06%



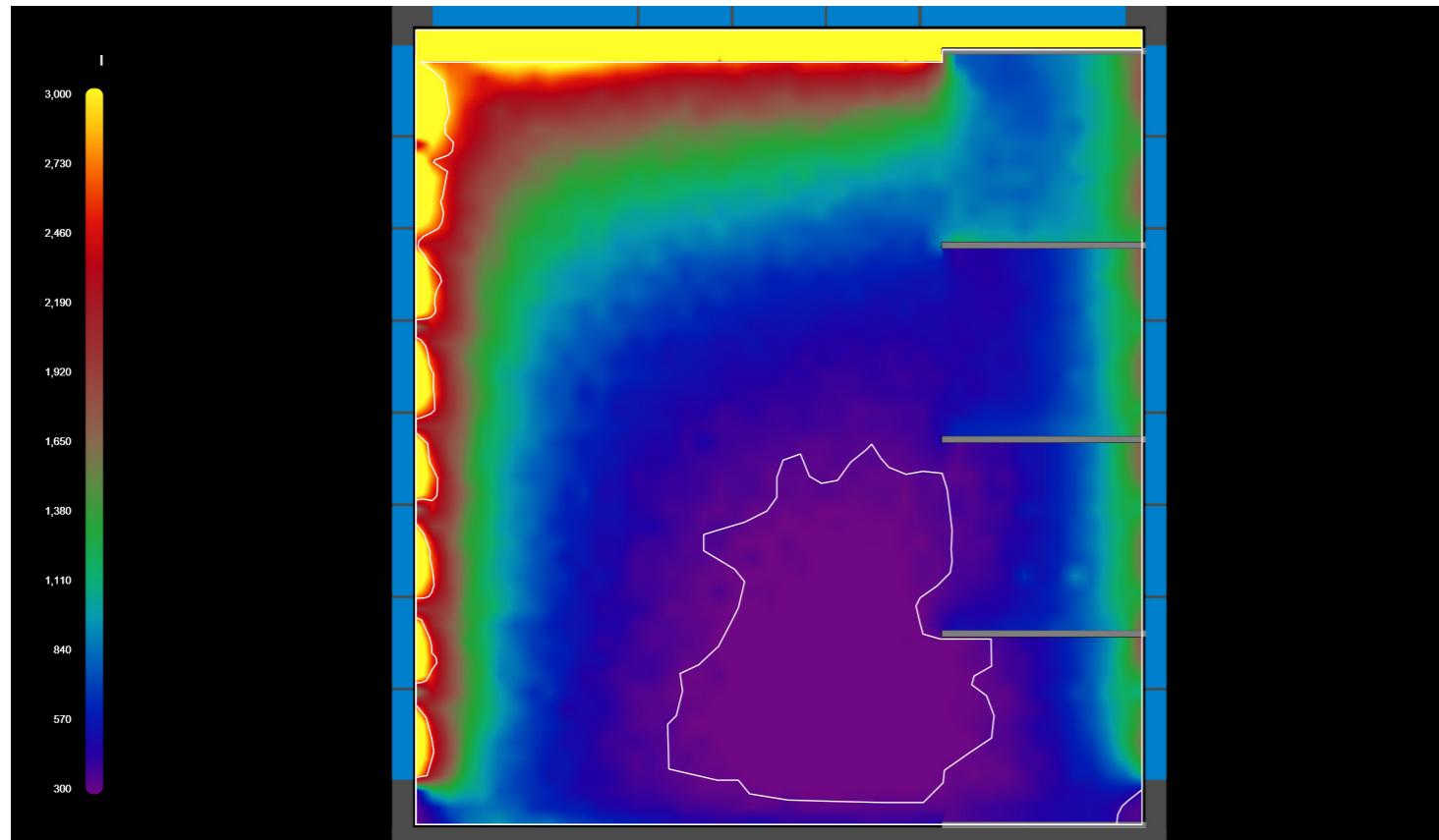
21 march, 15.00

Overall area : 170 sqm.  
Daylight access (300-3000 lux) area : 119 sqm.  
Percentage of daylight access area to overall area : 70 %



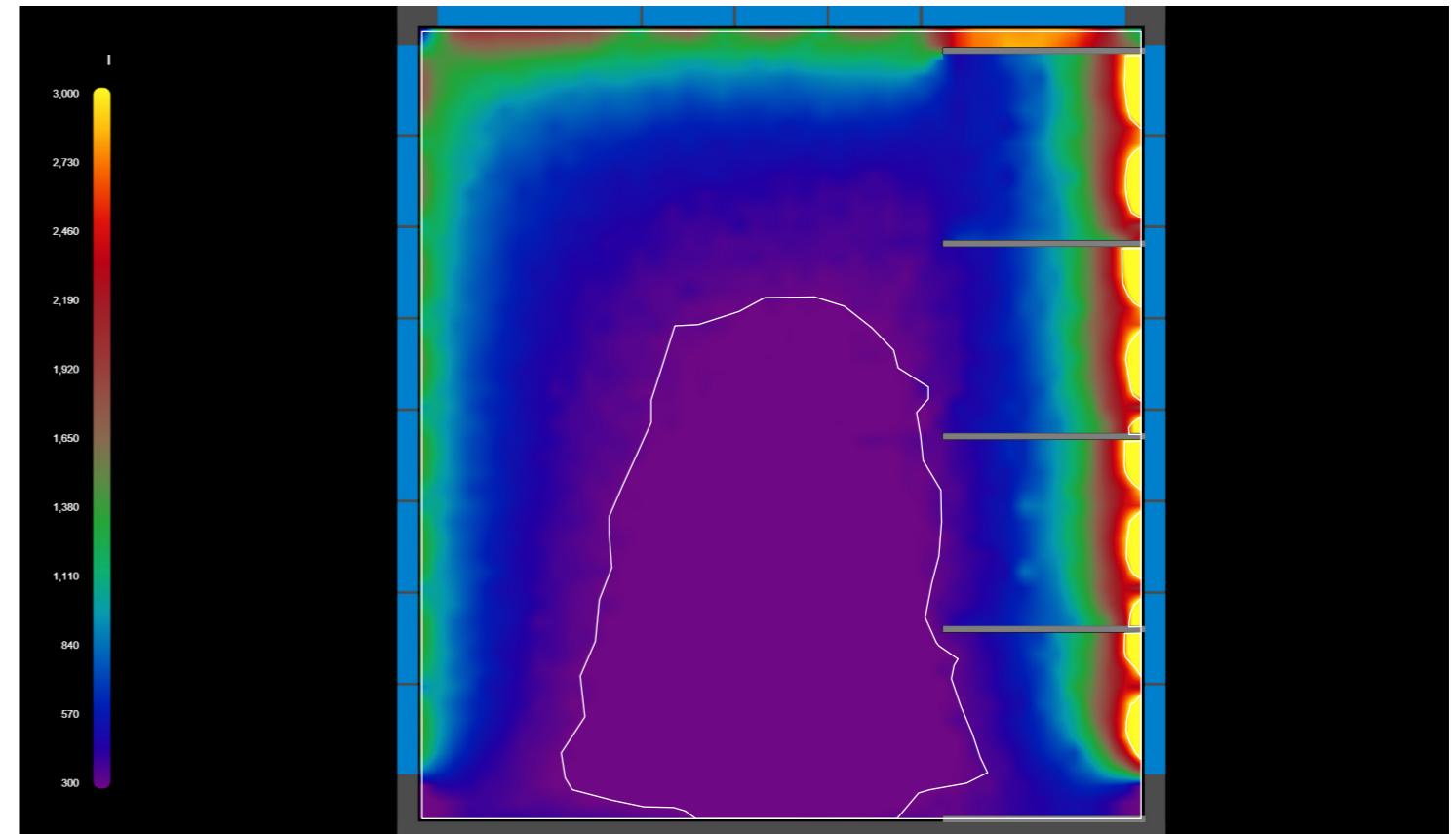
## Proposal

Since the existing design already achieves a good daylight access percentage, the adjusted design aims to enhance it further by reducing areas with more than 3000 lux while avoiding an increase in dark zones below 300 lux. To achieve this balance, a 60 cm overhang is added above the window, minimizing direct solar radiation without obstructing useful daylight access to the building.



21 march, 9.00

Overall area : 170 sqm.  
Daylight access (300-3000 lux) area : 136 sqm.  
Percentage of daylight access area to overall area : 80 %



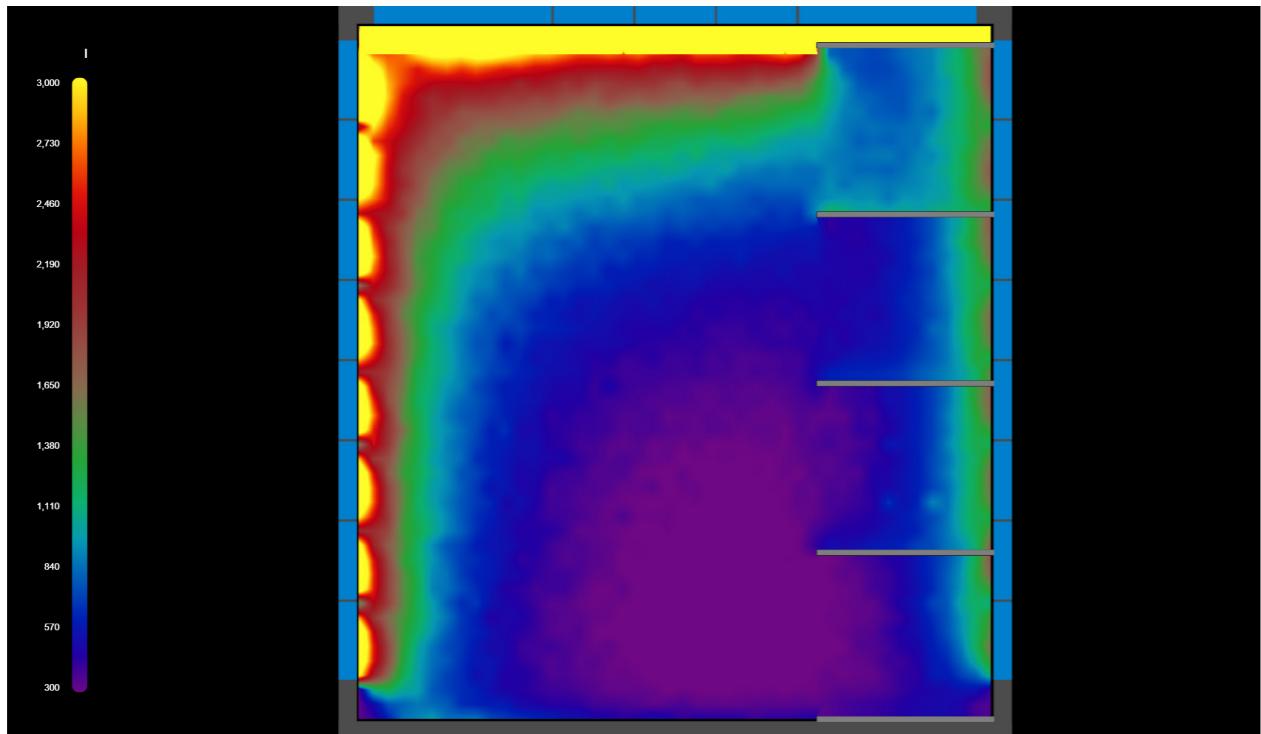
21 march, 15.00

Overall area : 170 sqm.  
Daylight access (300-3000 lux) area : 122 sqm.  
Percentage of daylight access area to overall area : 71.76 %

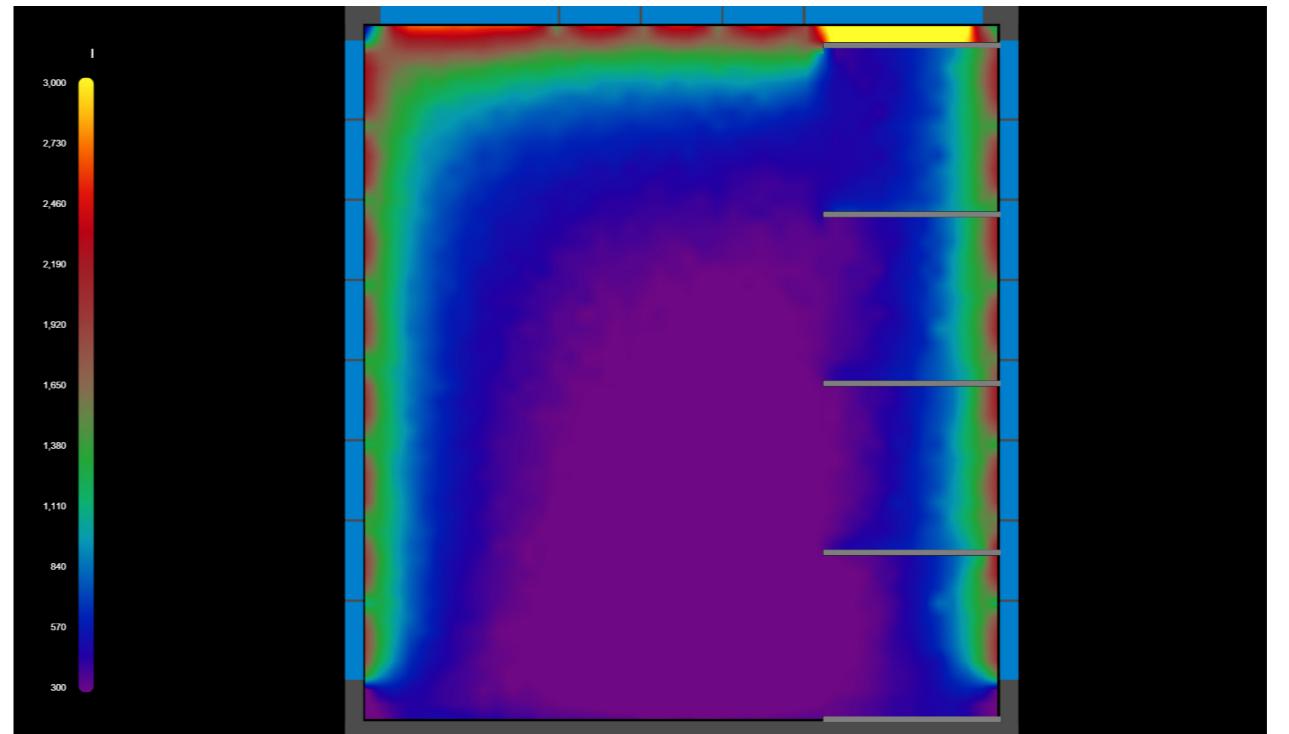


## Proposed, plan

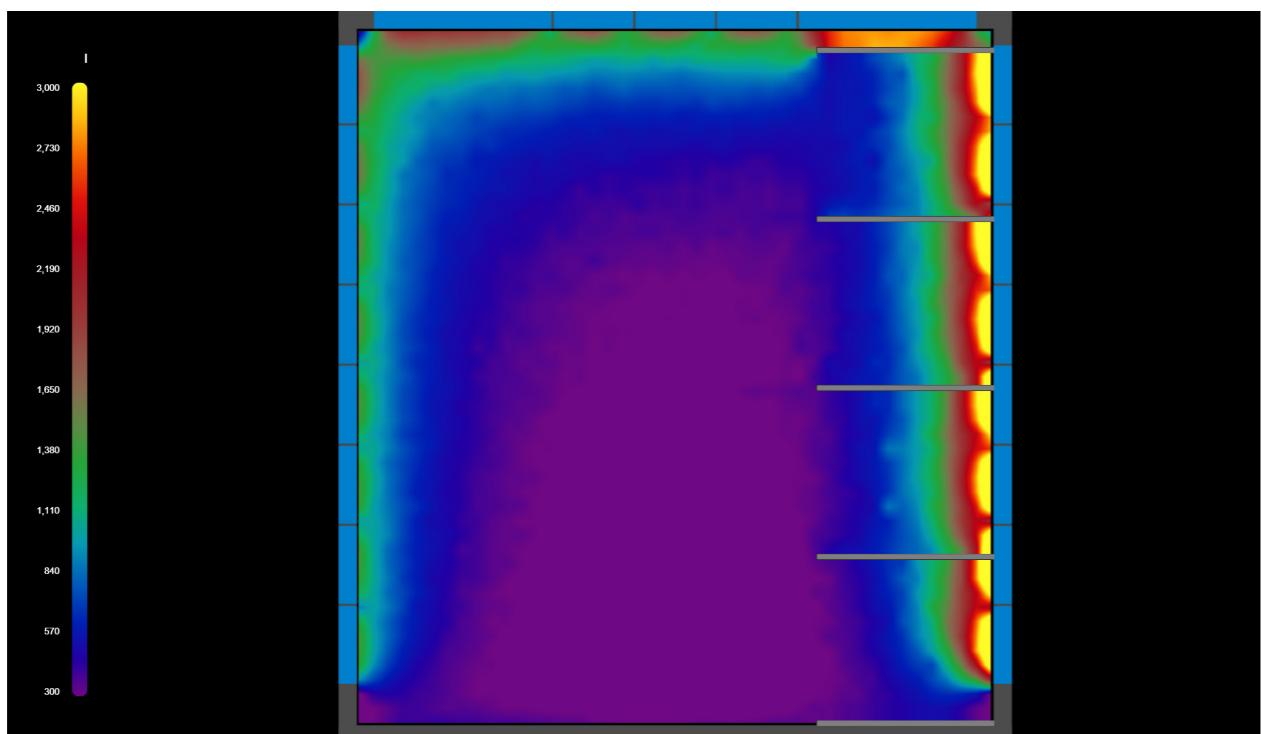
60 cm overhang added to the external facade



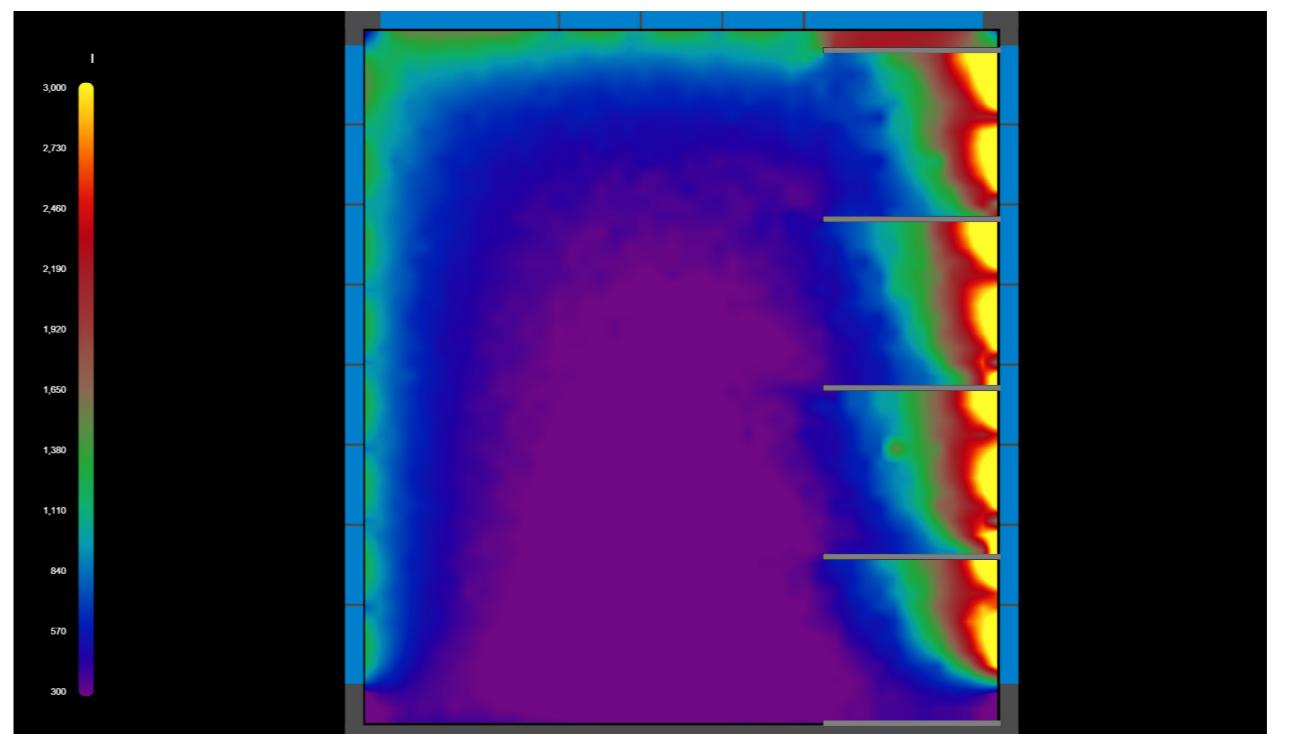
21 march, 9.00



21 march, 12.00



21 march, 15.00

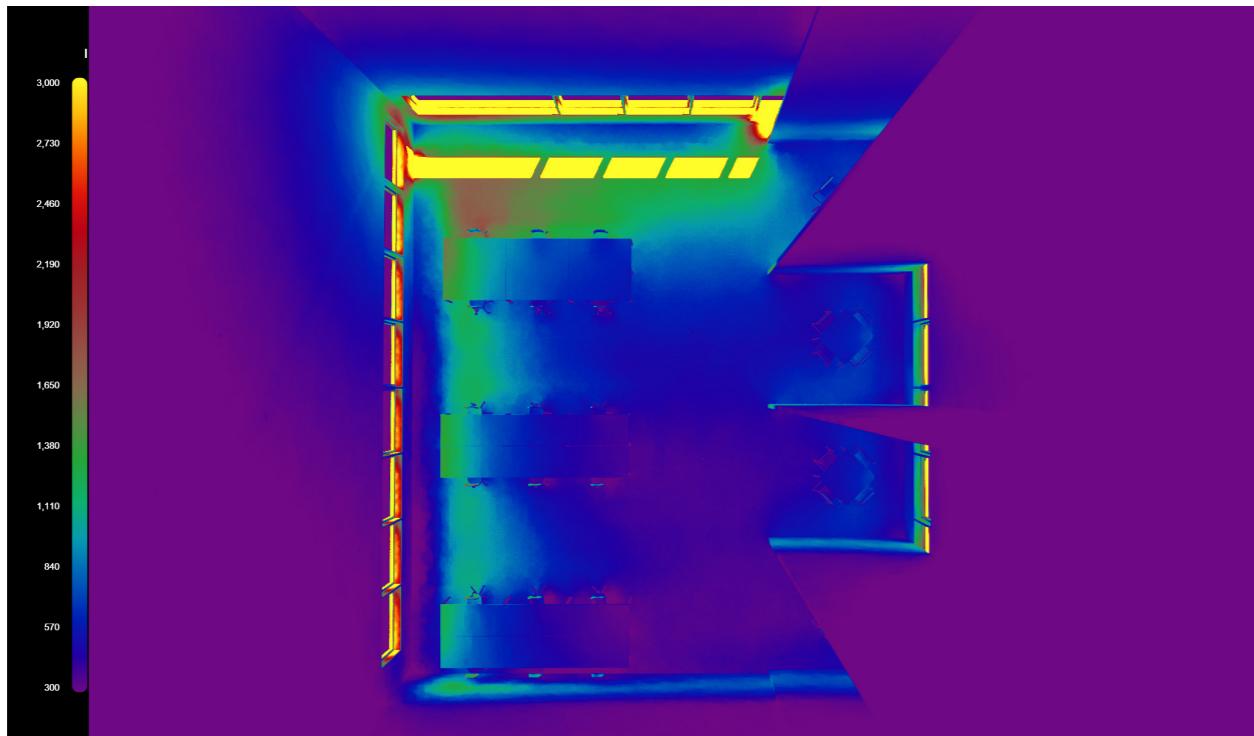


21 march, 17.00

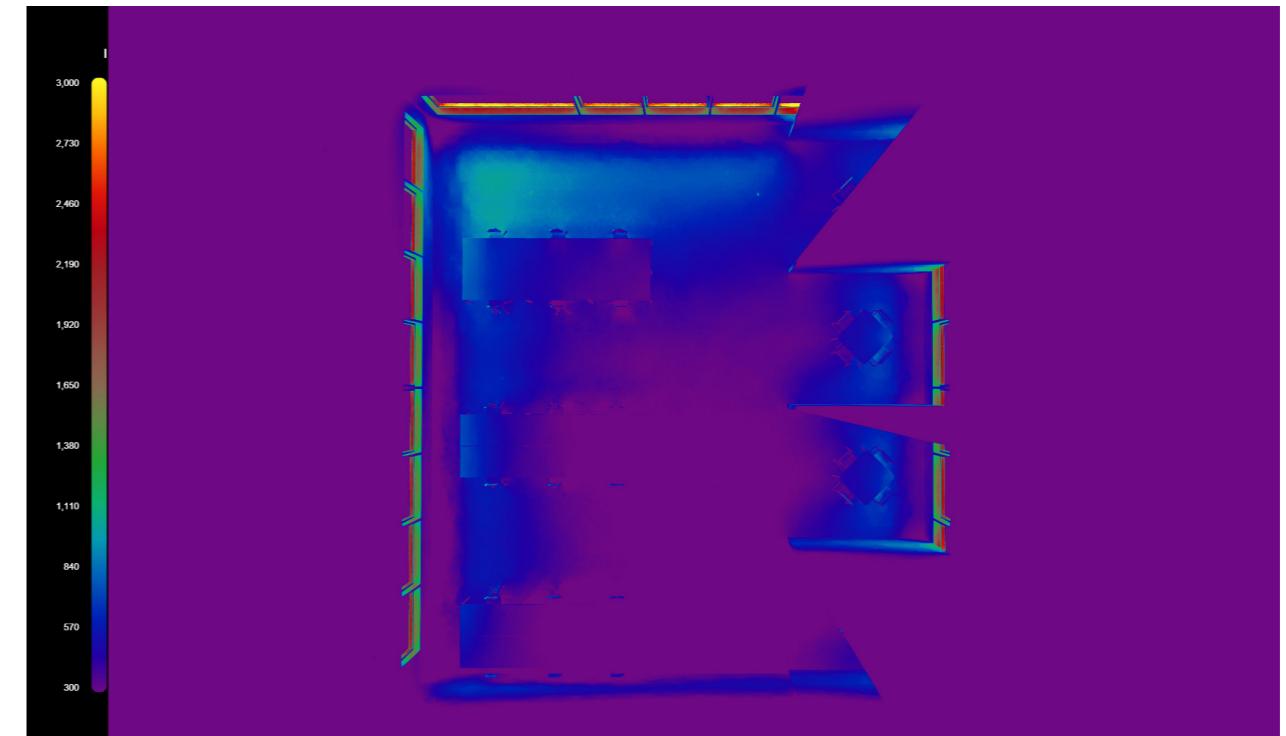


## Proposed, bird view

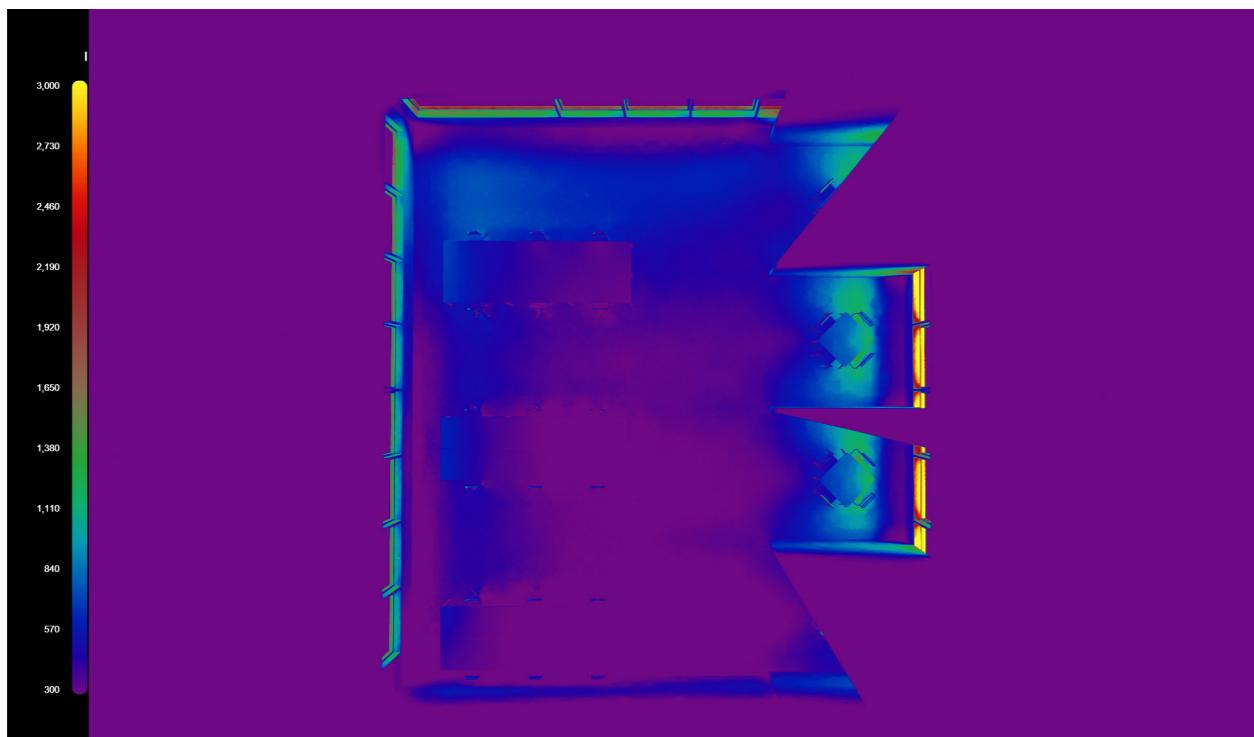
60 cm overhang added to the external facade



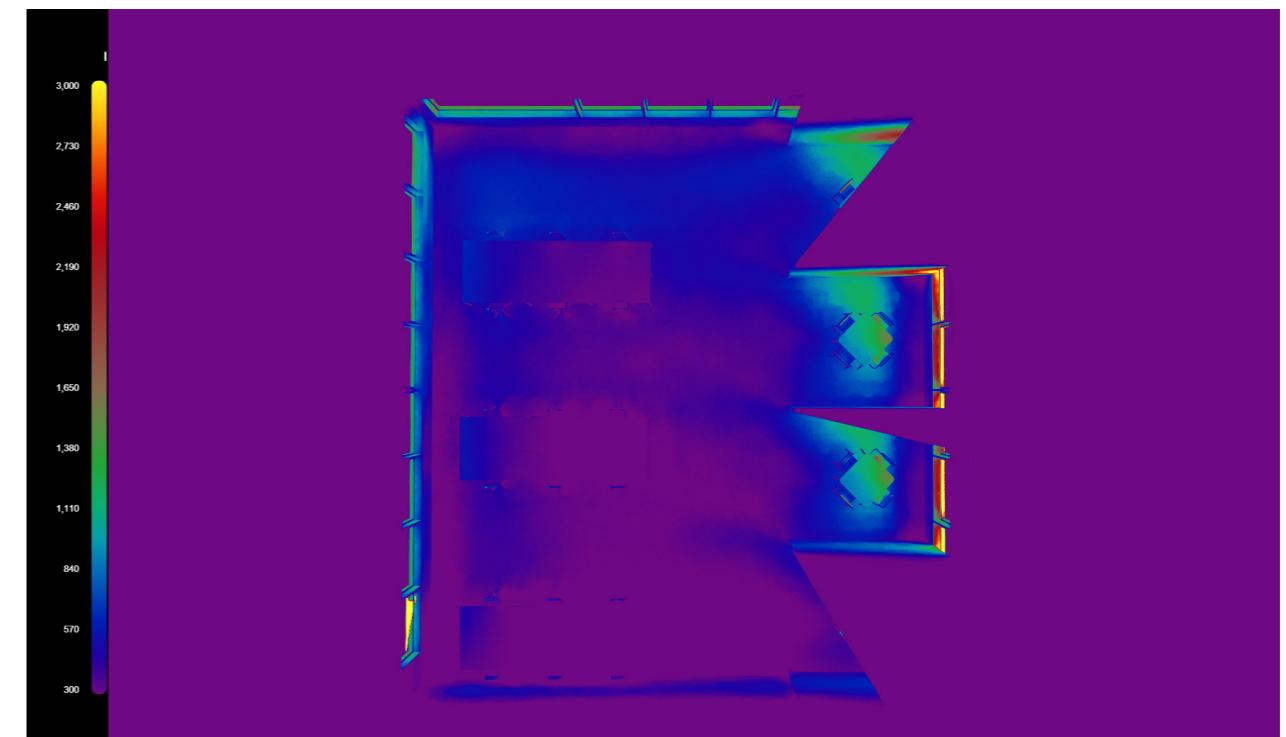
21 march, 9.00



21 march, 12.00



21 march, 15.00

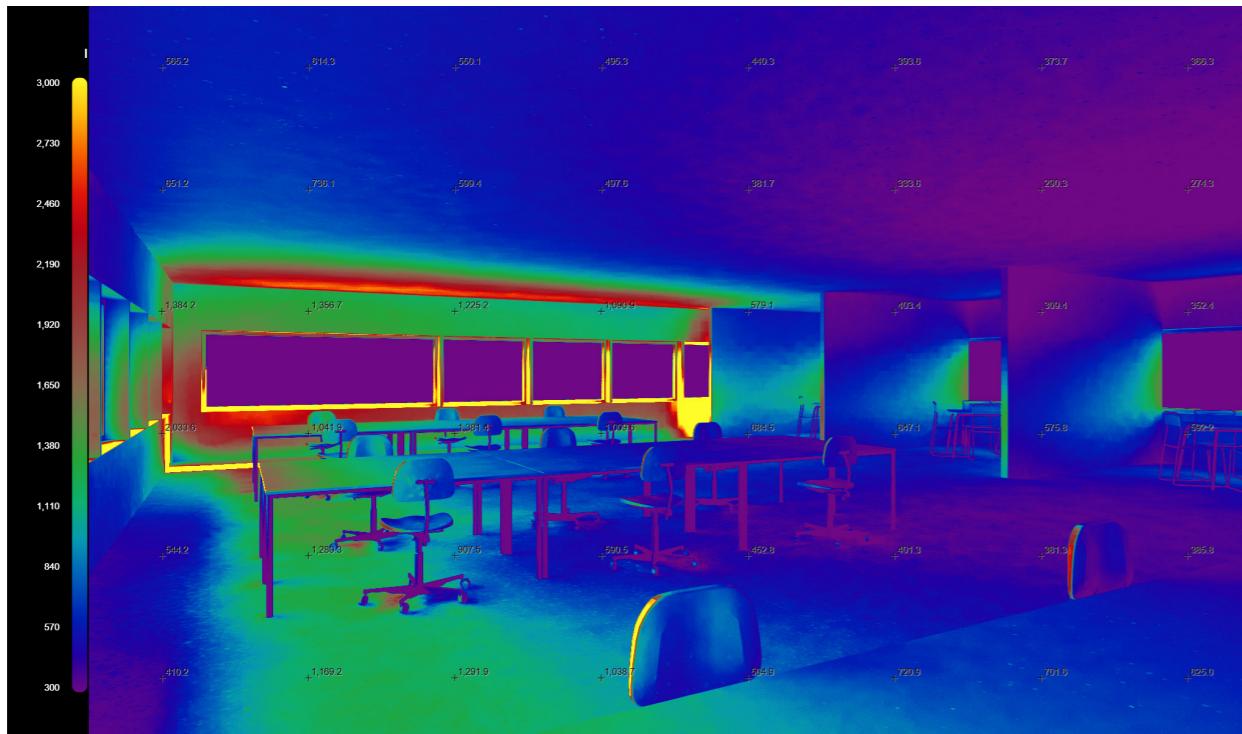


21 march, 17.00

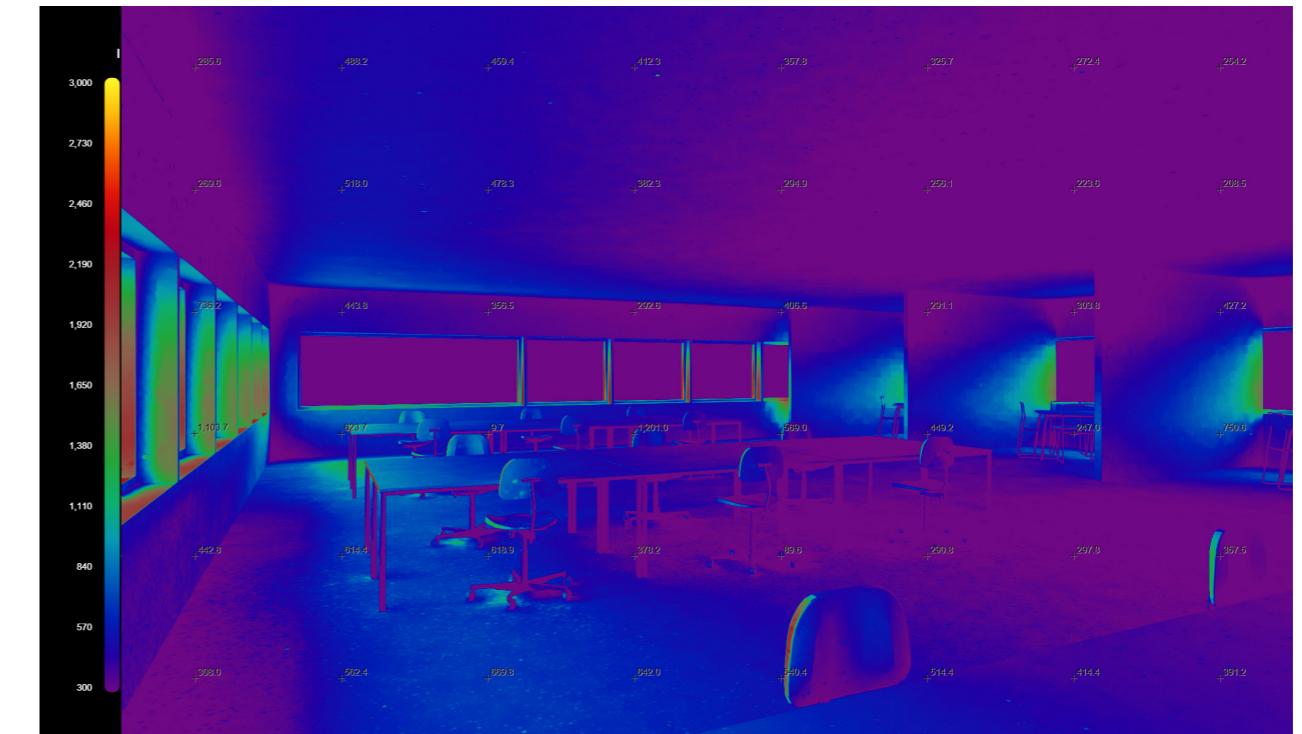


## Proposed, perspective

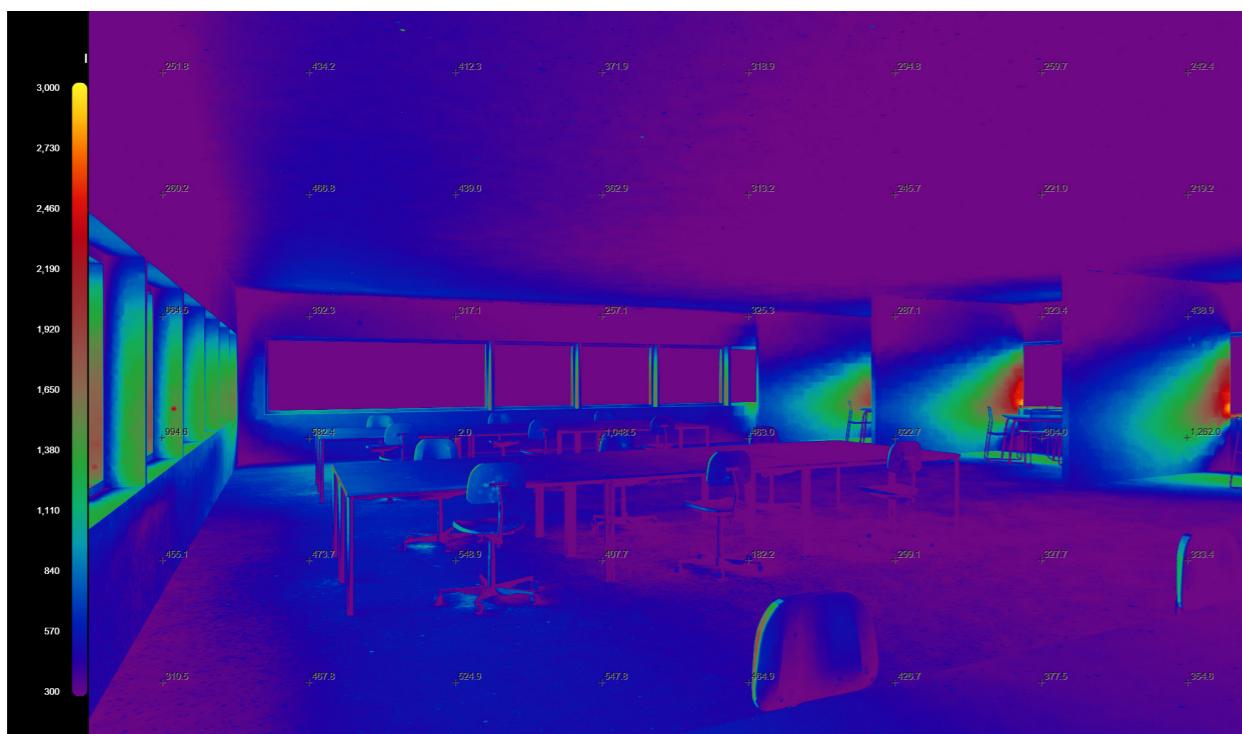
60 cm overhang added to the external facade



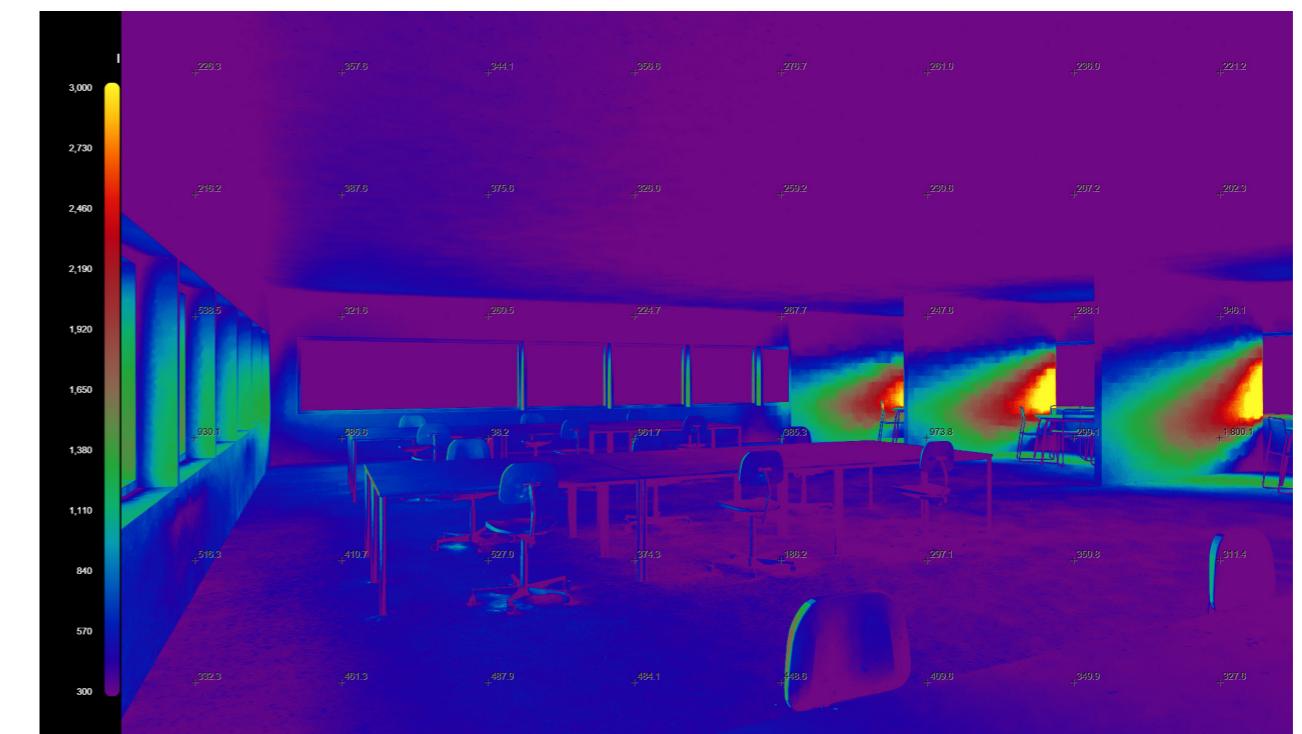
21 march, 9.00



21 march, 12.00

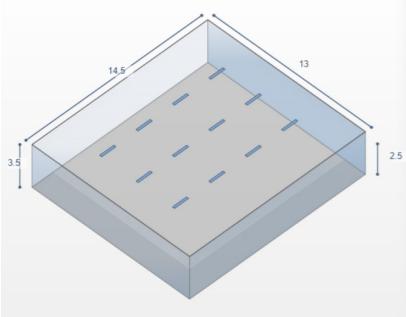


21 march, 15.00



21 march, 17.00

## Lighting option 01



### Room Dimension

Length - 13 m

Width - 14.5 m

Height 3.5 m

Workplane - 2.5 m

### Room reflectance

Ceiling - 60 %

Walls - 50 %

Floor - 20 %

### Criteria

Illuminance - 300 lux

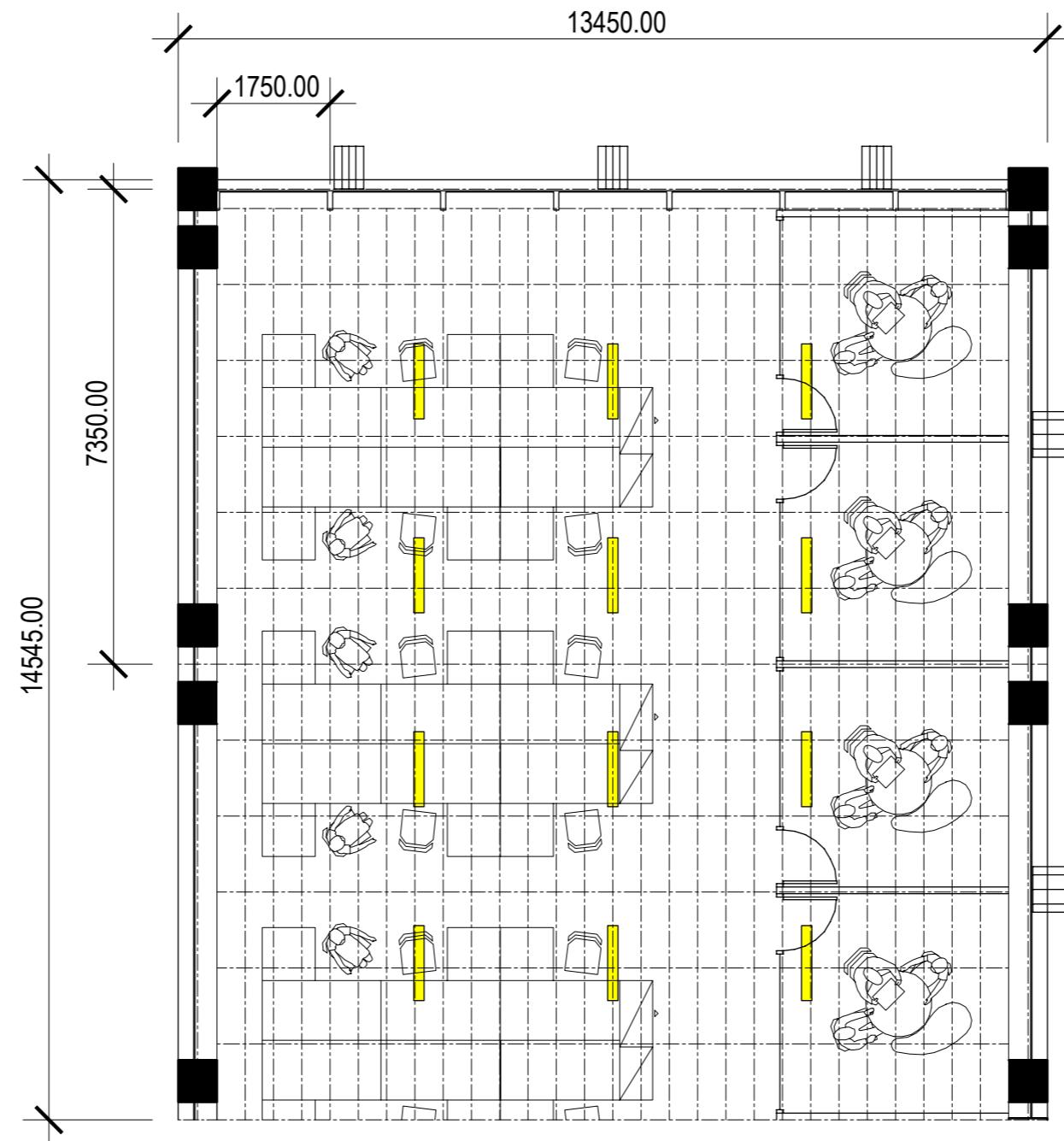
### Calculation results

Illuminance - 339 lux

Power density - 3.44

W/m<sup>2</sup>

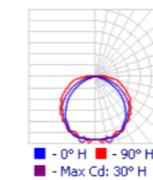
Quantity - 12



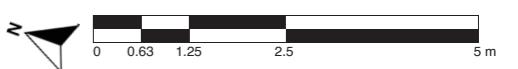
Luminaire LED  
[ A ] - CLF7L 4FT 50W 40K CLP

Light Loss Factor	1	Symbol Shape	Rectangular
Suspension Length	0	Symbol Length	.16
Orientation	0	Symbol Width	1.16

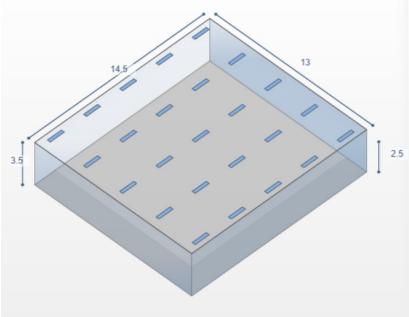
Lamp Quantity	336
Lumens Per Lamp	16
Wattage	54



Plan



## Lighting option 02



### Room Dimension

Length - 13 m

Width - 14.5 m

Height 3.5 m

Workplane - 2.5 m

### Room reflectance

Ceiling - 60 %

Walls - 50 %

Floor - 20 %

### Criteria

Illuminance - 300 lux

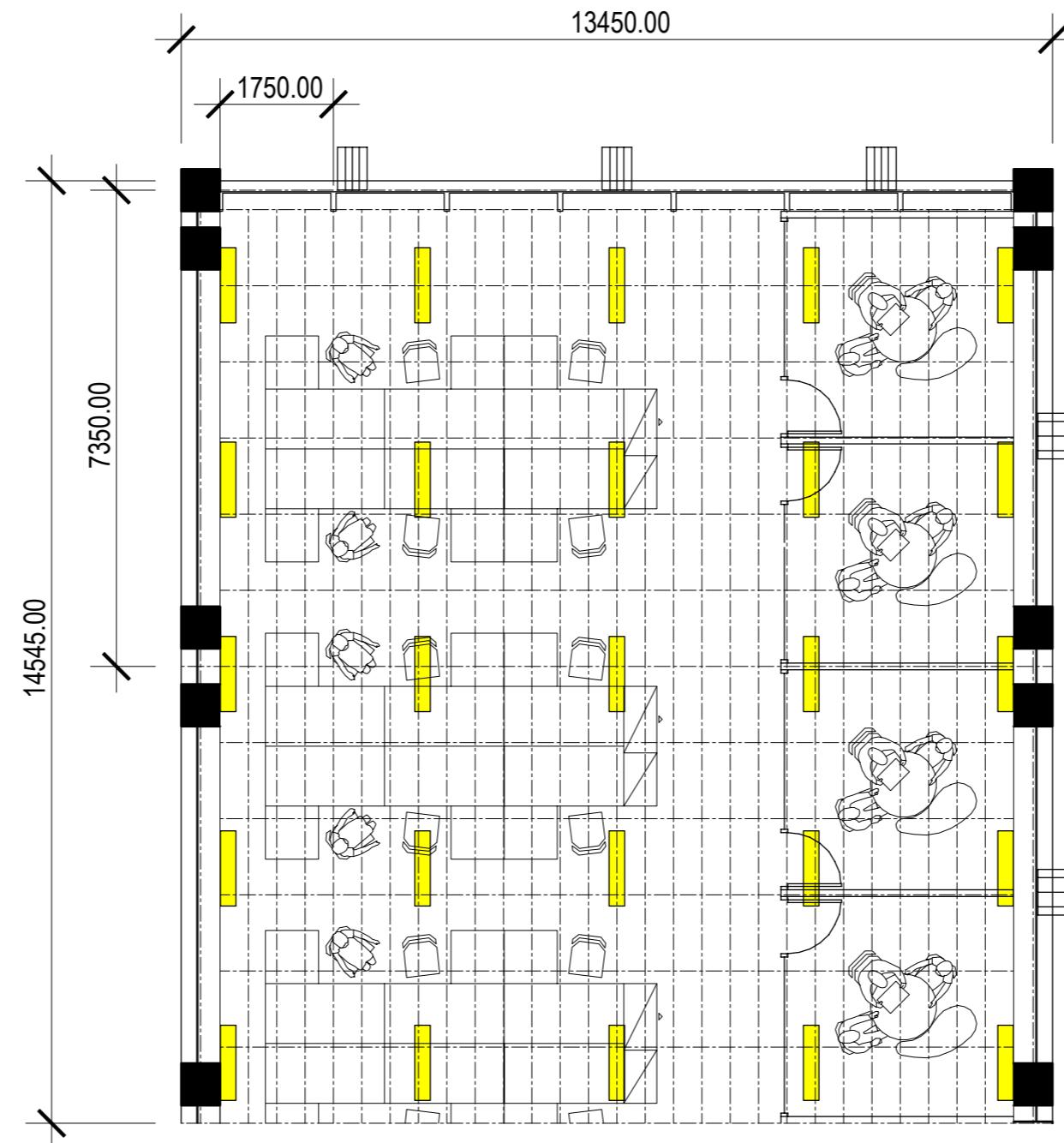
### Calculation results

Illuminance - 338 lux

Power density - 3.13

W/m<sup>2</sup>

Quantity - 25



#### Luminaire LED

[ B ] - VRP 1X4 3000LM 50K 90CRI 120V FPC250

Light Loss Factor

Suspension Length

Orientation

Symbol Shape

Symbol Length

Symbol Width

Rectangular

.24

1.16

Lamp Quantity

2470

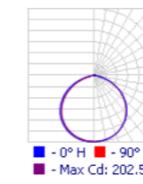
23.6

Lumens Per Lamp

2470

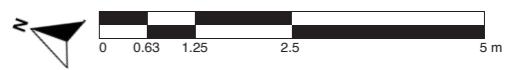
23.6

Wattage

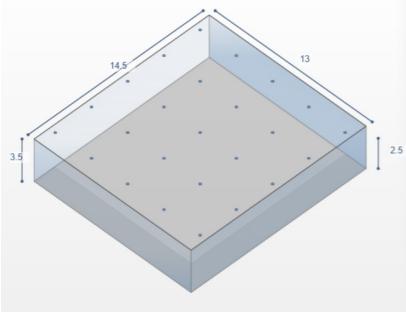


VRP 1X4 3000LM 50K 90CRI 120V FPC250

Plan



## Lighting option 03



### Room Dimension

Length - 13 m

Width - 14.5 m

Height 3.5 m

Workplane - 2.5 m

### Room reflectance

Ceiling - 60 %

Walls - 50 %

Floor - 20 %

### Criteria

Illuminance - 300 lux

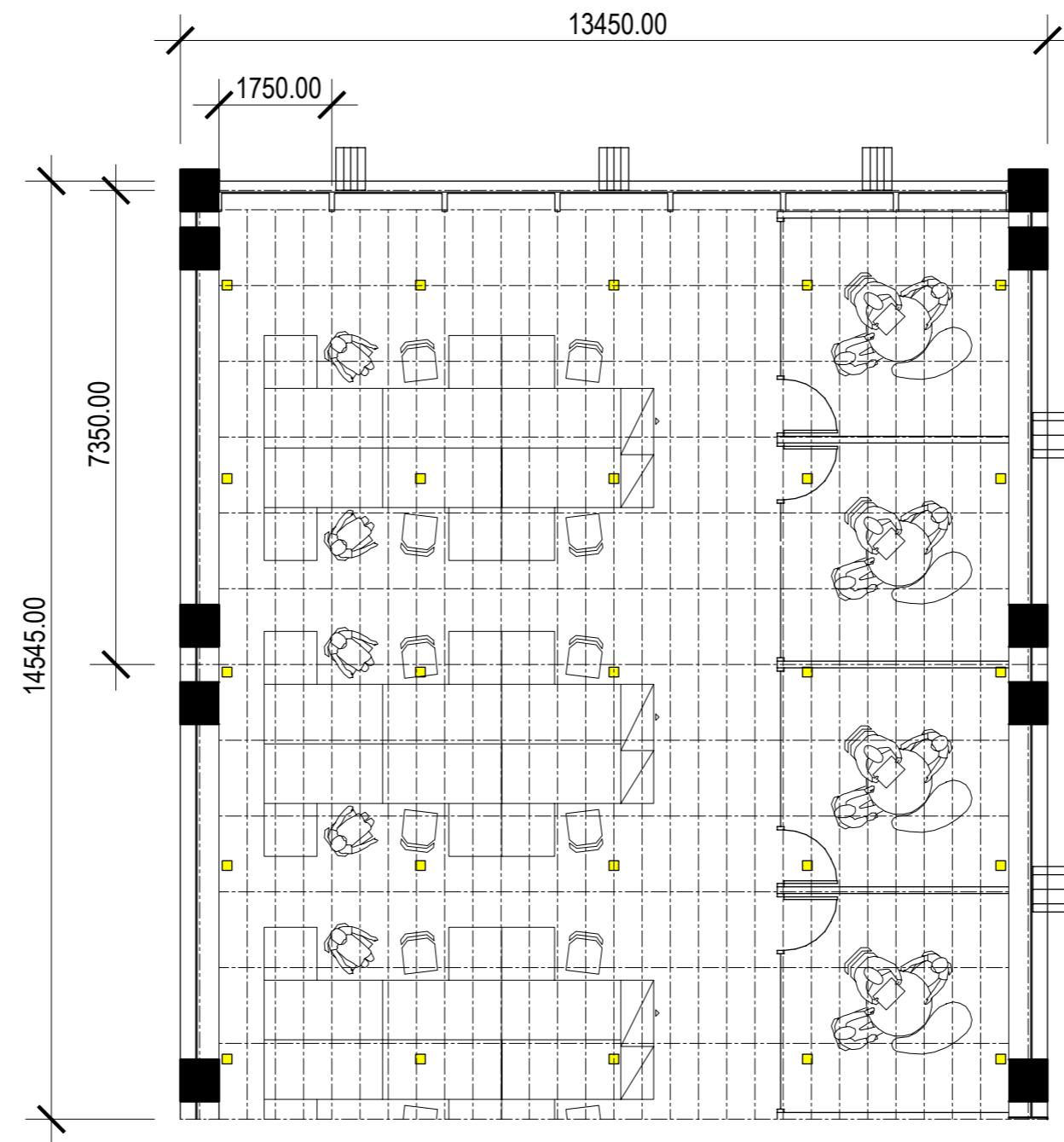
### Calculation results

Illuminance - 304 lux

Power density - 4.47

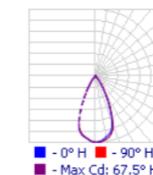
W/m<sup>2</sup>

Quantity - 25

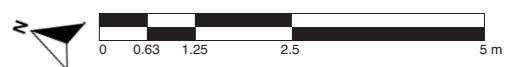


VRDL6 2000LM TUVH RHYR ND 90CRI  
CPL @27K

Luminaire LED  
[ C ] - VRDL6 2000LM TUVH RHYR ND 90CRI CPL @27K  
Light Loss Factor  Symbol Shape  Lamp Quantity   
Suspension Length  Symbol Length  Lumens Per Lamp   
Orientation  Symbol Width  Wattage

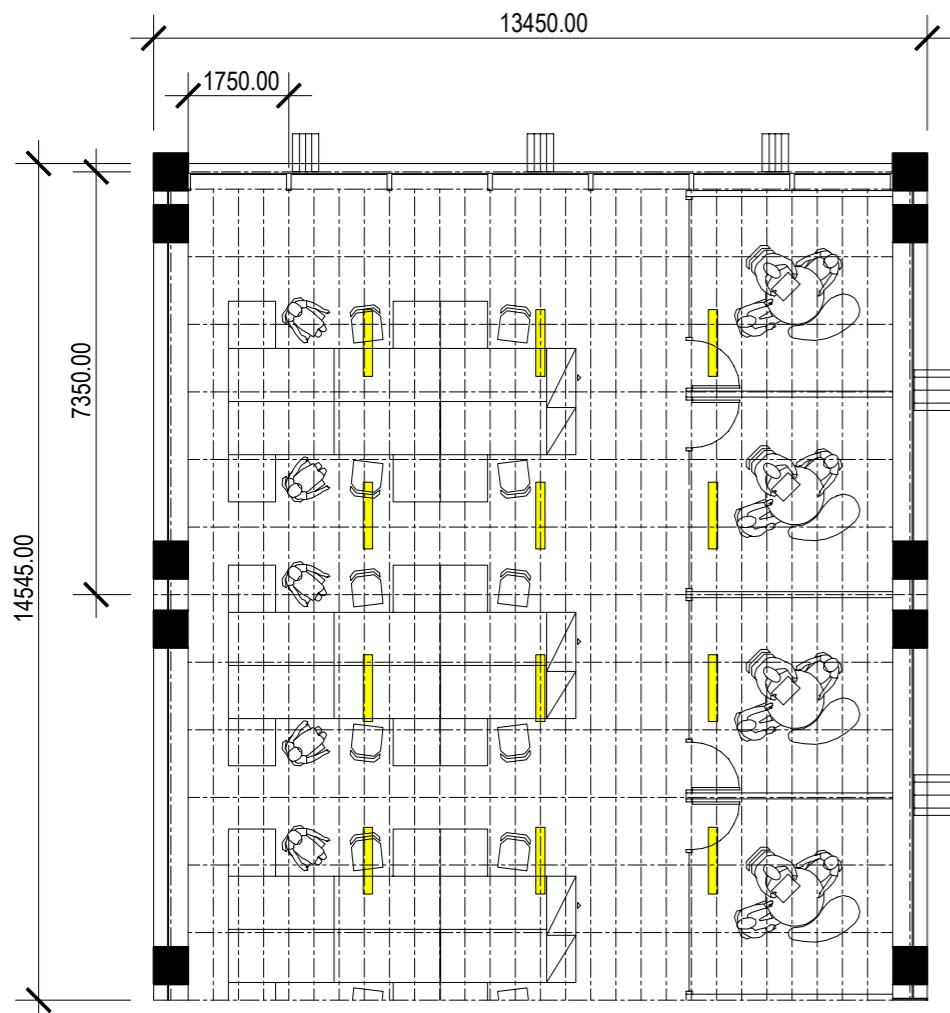


Plan



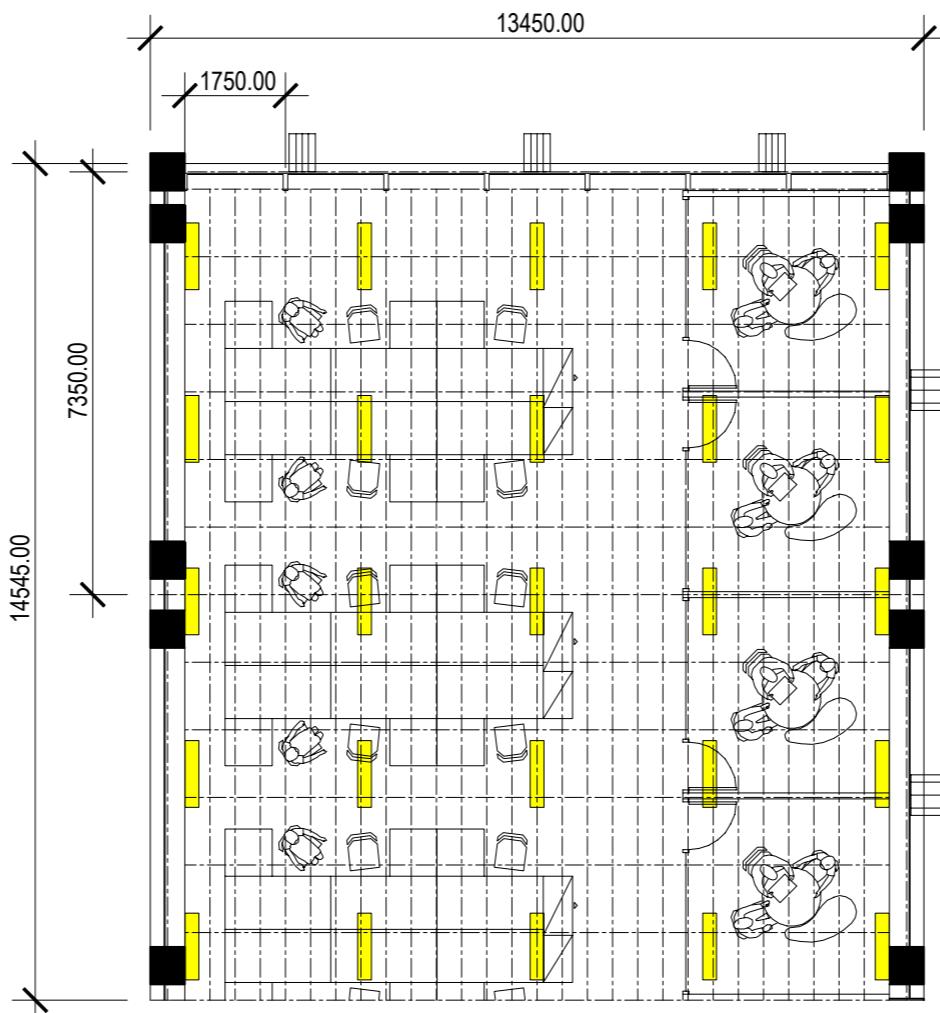
## Calculation

**Lighting option 01**



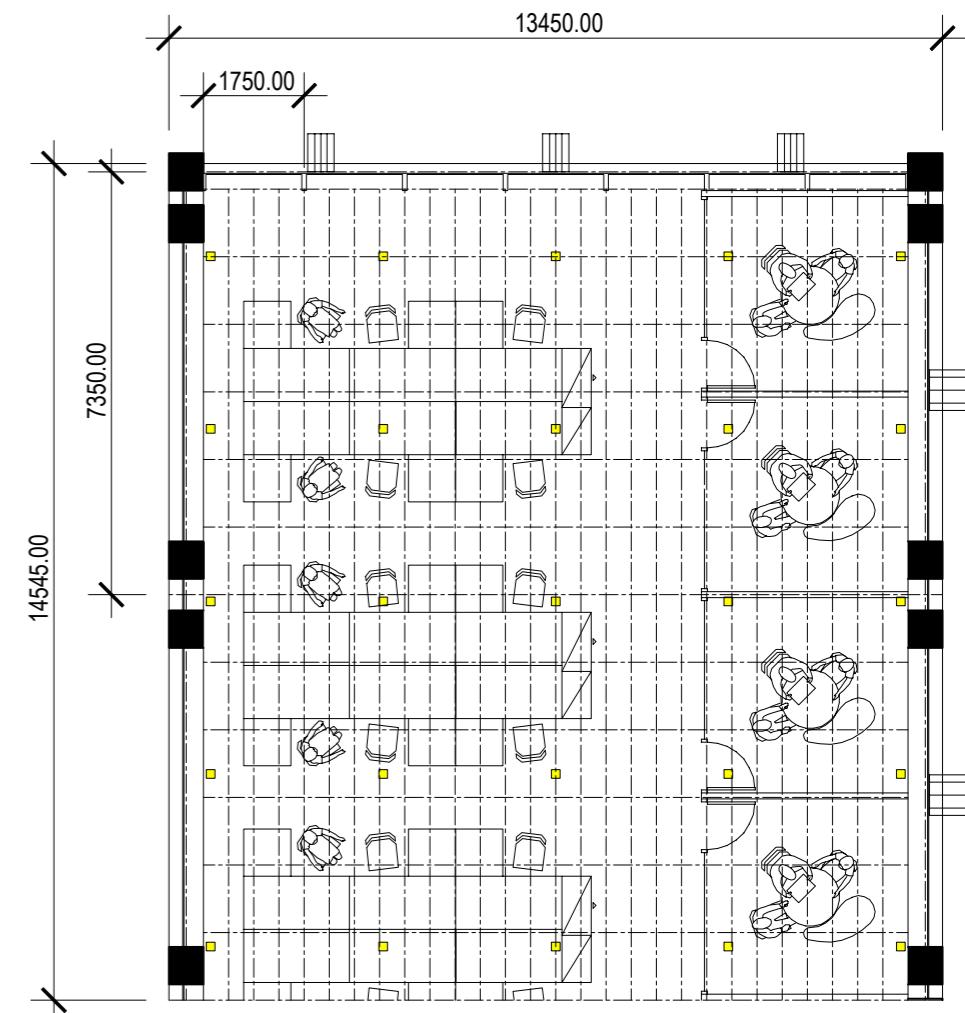
**Calculation results**  
Illuminance - 339 lux  
Power density - 3.44  
W/m<sup>2</sup>  
Quantity - 12

**Lighting option 02**



**Calculation results**  
Illuminance - 338 lux  
Power density - 3.13  
W/m<sup>2</sup>  
Quantity - 25

**Lighting option 03**



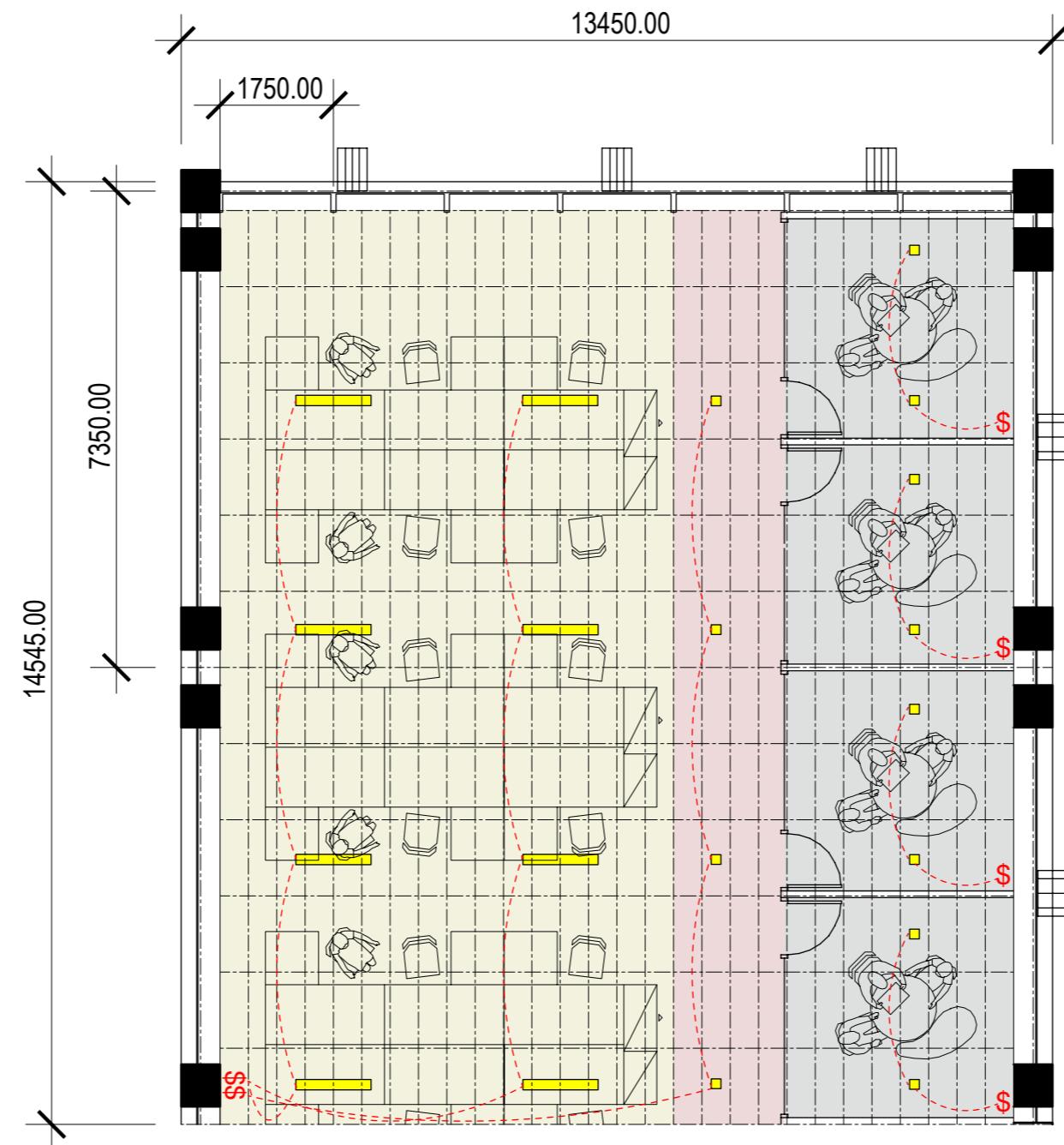
**Calculation results**  
Illuminance - 304 lux  
Power density - 4.47  
W/m<sup>2</sup>  
Quantity - 25

## Conclusion

Lighting Option 1 is the most suitable for the space, as its illuminance exceeds 300 lux while requiring the least number of fixtures. However, due to the building layout and lighting design constraints, the final lighting solution cannot rely solely on the Luminate LED light bar (Option1), as some areas are not suitable for this type of fixture. Therefore, in the final design, the Luminate LED light bar (Option1) will be used in the communal spaces, while luminaire LED downlights (Option3) will be installed in the cellular and circulation areas.

## Lighting design concept

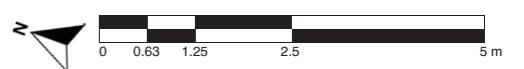
- Lighting
- \$ Switches
- Wire
- Open plan zone
- Circulation zone
- Cellular zone



### Lighting design concept

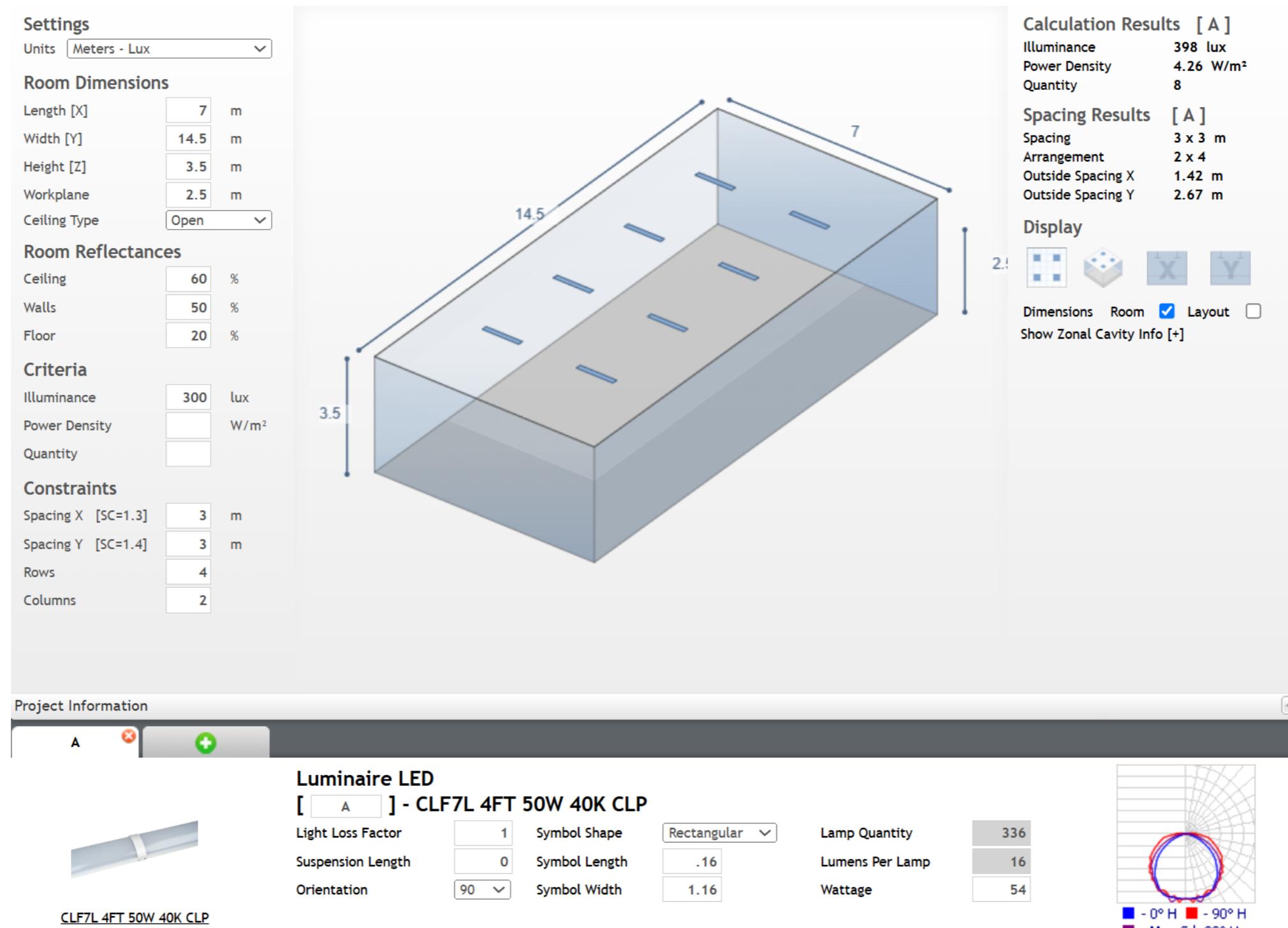
The area is divided into three zones based on their functions. The open zone, being a large open space, utilizes the Luminate LED light bar (Option 1) for its ability to provide a high level of illumination across a wide area. In the circulation areas or corridors, luminaire LED downlights (Option 3) are selected due to the narrowness of the space. Lastly, in the cellular zones such as meeting rooms, luminaire LED downlights (Option 3) are also used. Their compact size allows for flexibility in quantity and placement, making them suitable for varying room sizes and functions.

Plan



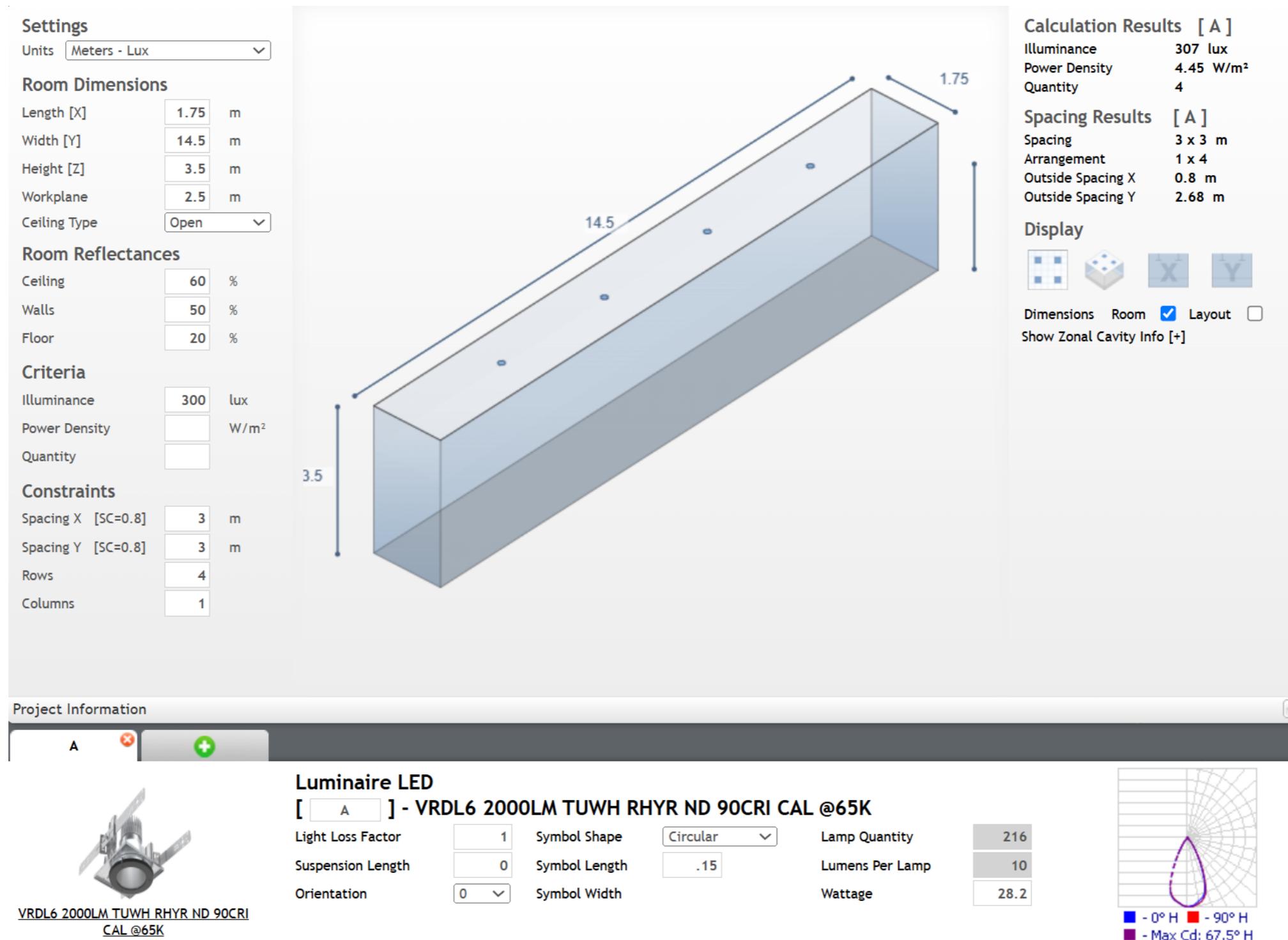
## Lighting type

Luminate LED light bar (Option1) : open plan zone



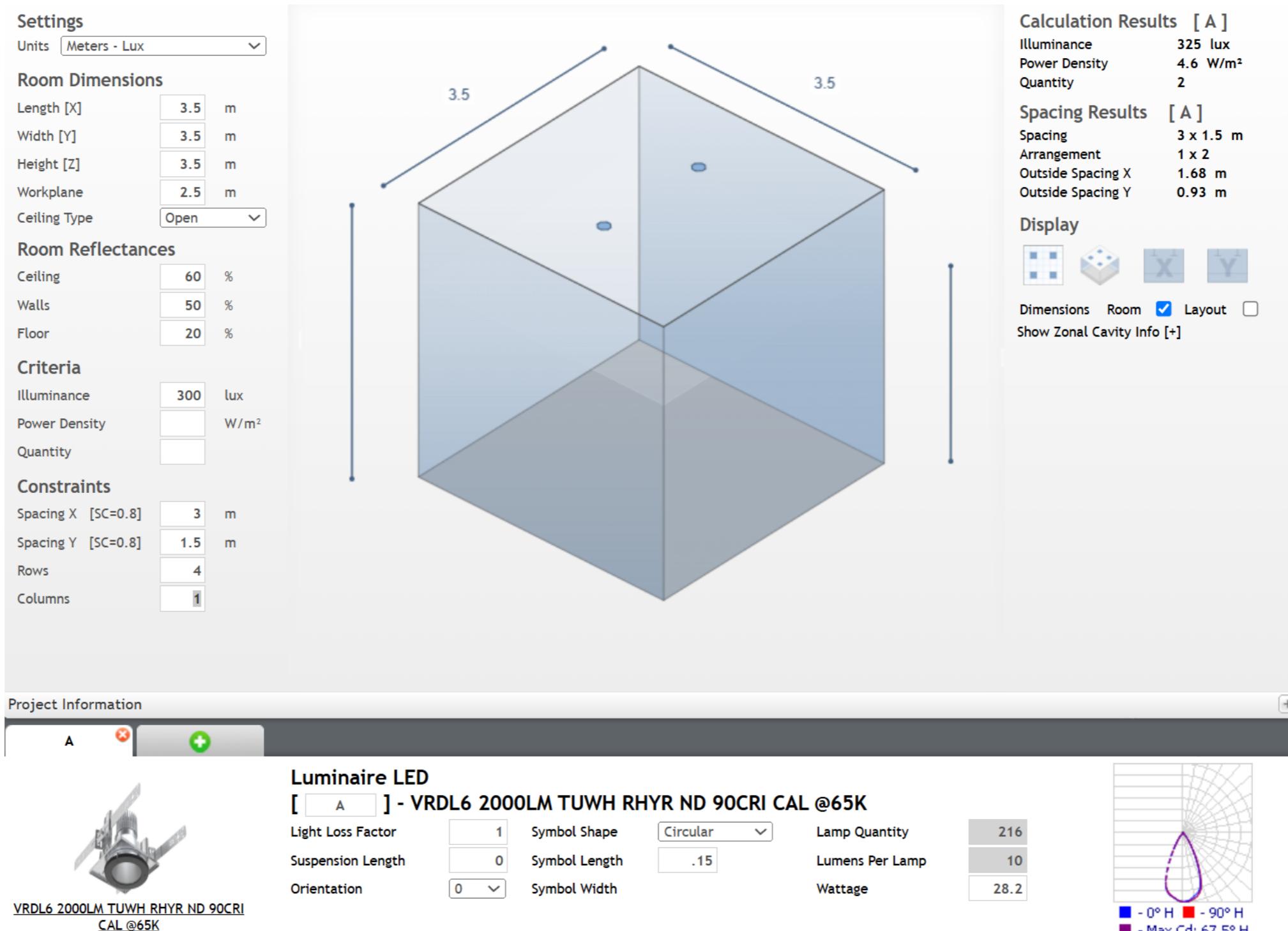
## Lighting type

Luminate LED light bar (Option1) : circulation zone



## Lighting type

Luminate LED light bar (Option1) : cellular zone



## Visualisation 1



## Visualisation 2



### Visualisation 3

