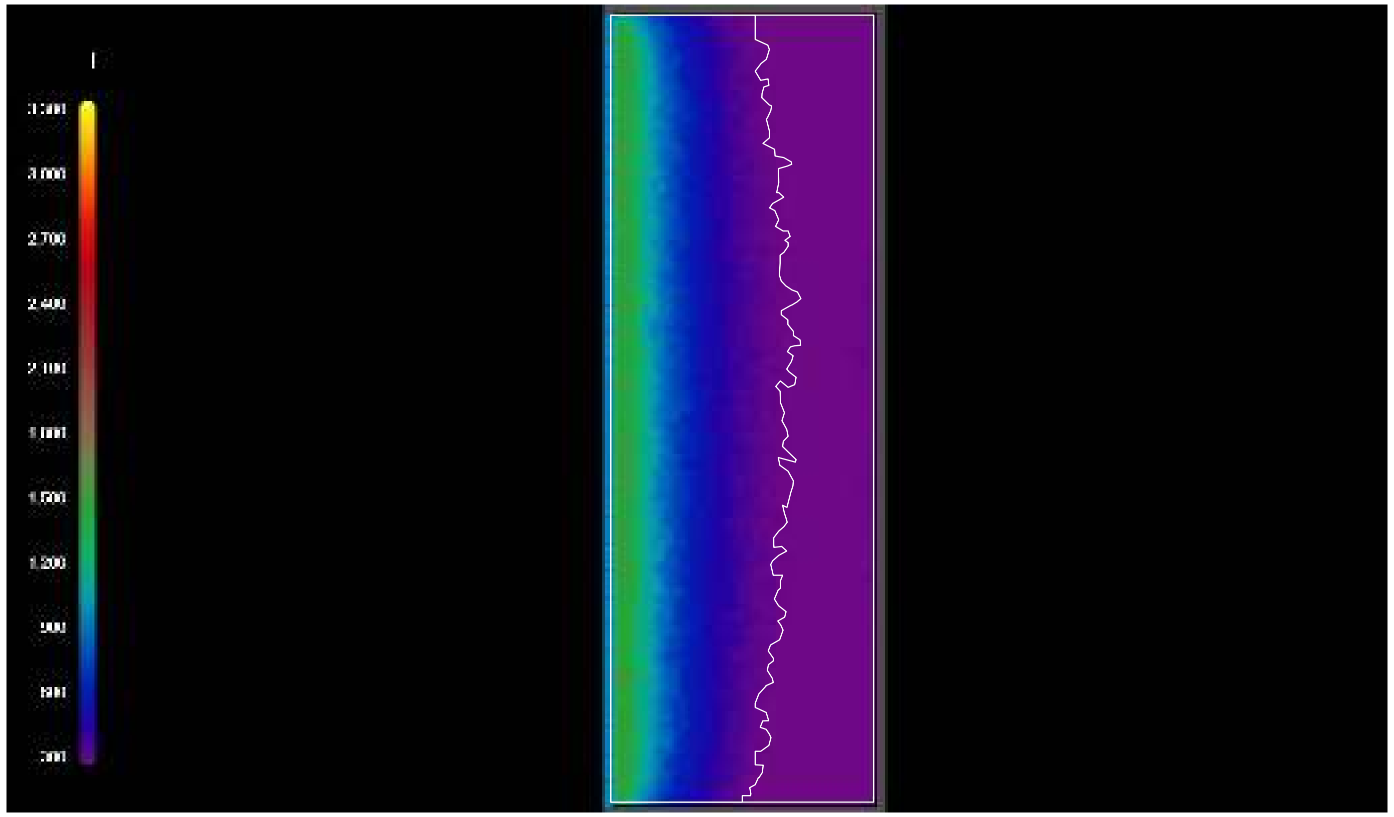
CITIGROUP CENTER

601 Lexington Avenue + 54th Street, New York NY 10022

Hugh Stubbins + William Le Messurier

The CitiCorp Center, New York's sixth tallest building, pioneered the use of a tuned mass damper. Designed by William LeMessurier, its lobby was renovated in 1997 and rebuilt in 2010, with secret repairs ensuring its safety.

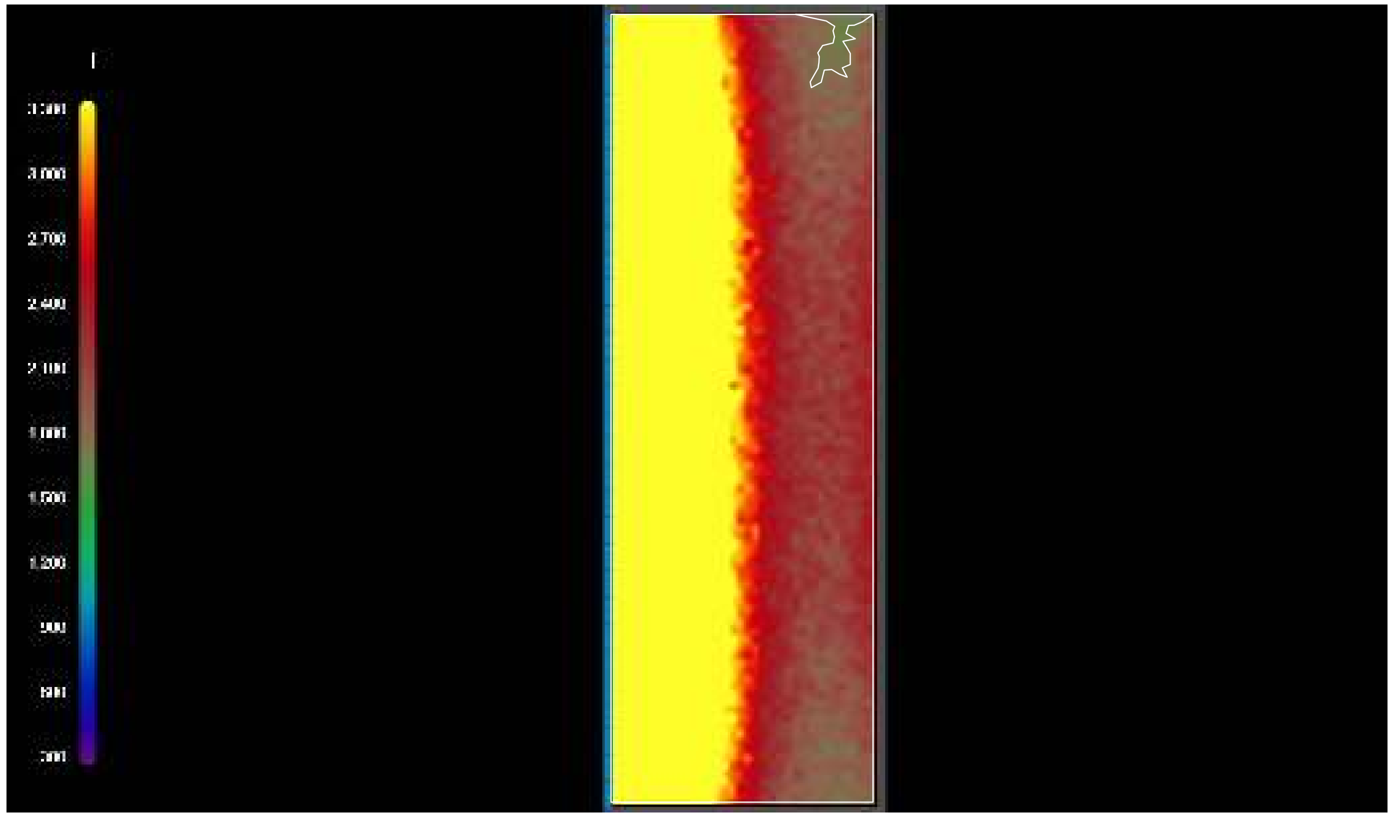
21 March
9 AM



Total Area 307 SQ.M.
Selected Area 196.8 SQ.M.

64.12 % of total area

21 March
3 PM



Total Area 307 SQ.M.
Selected Area 2.57 SQ.M.

0.84 % of total area

It shows how sunlight interacts with the window at 9 AM on 21 March, highlighting the early morning solar exposure. A color gradient is used to visualize solar irradiance, with cooler tones like deep purple and blue representing lower intensity light, and warmer tones such as yellow indicating higher irradiance levels. In this morning scenario, the majority of the window is dominated by cooler colors, showing that the sunlight is relatively soft and diffused at this time of day.

Sunlight enters the space at a sharp angle, casting a vertical band of light along the right edge of the window. This creates a broad spread of illumination across a significant portion of the window surface, although the intensity remains low. According to the data, 196.8 square meters out of the total 307 square meters is exposed to sunlight at this hour—amounting to 64.12% of the entire area.

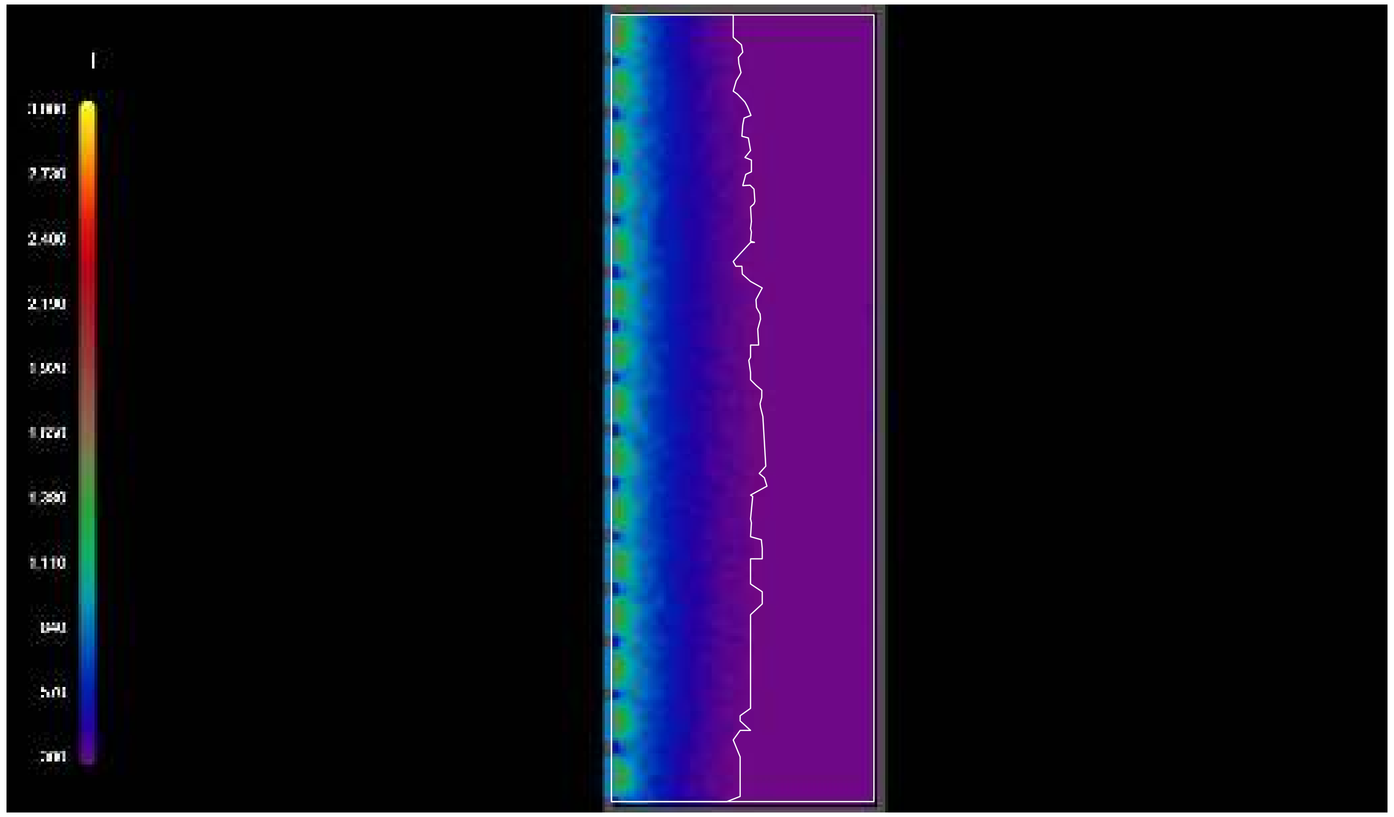
This distribution pattern indicates that in the morning, the sun's position results in widespread but gentle lighting, which can be highly desirable in architectural design. It allows for ample daylight penetration without the drawbacks of glare or excessive heat gain. Such conditions are often ideal for energy-efficient buildings aiming to reduce the need for artificial lighting while maintaining visual comfort.

It shows the sunlight pattern at 3 PM on 21 March, focusing on how the light interacts with the window in the afternoon. Here, the color gradient shifts dramatically toward the warmer end of the spectrum, with bright yellows and reds indicating areas of high solar irradiance. This suggests that the afternoon sun is much more intense compared to the morning.

However, despite the higher intensity, the sunlight at this time is concentrated in a narrow vertical band along the left edge of the window. Most of the window remains untouched by direct sunlight, which is reflected in the data: only 2.57 square meters out of the total 307 square meter window area is exposed to direct sunlight—just 0.84% of the entire surface.

This pattern highlights how the sun’s angle in the afternoon creates a sharper, more focused beam of light, potentially causing localized glare and heat gain, while leaving the rest of the window shaded. It’s a significant contrast to the morning condition, where light was softer and more broadly distributed.

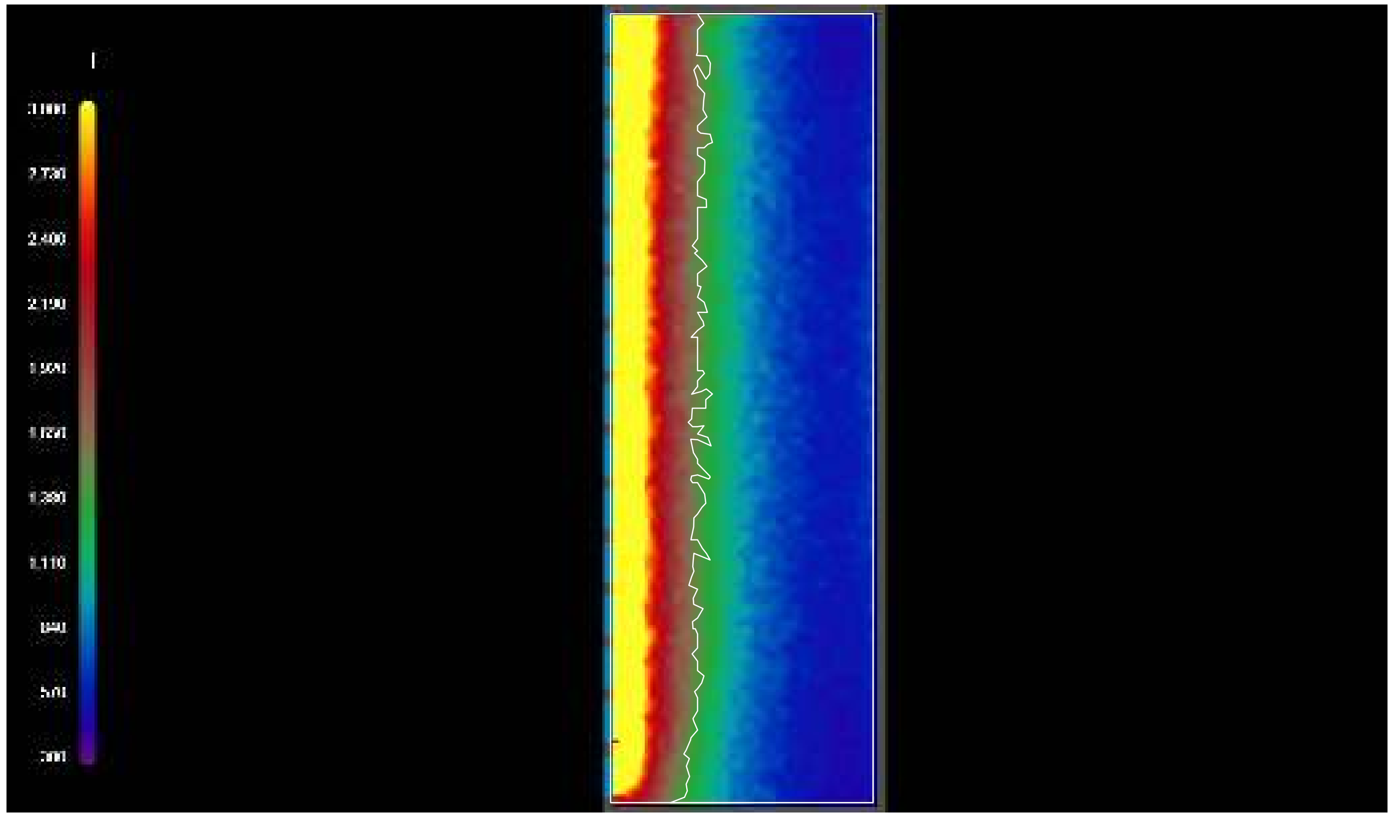
21 March
9 AM

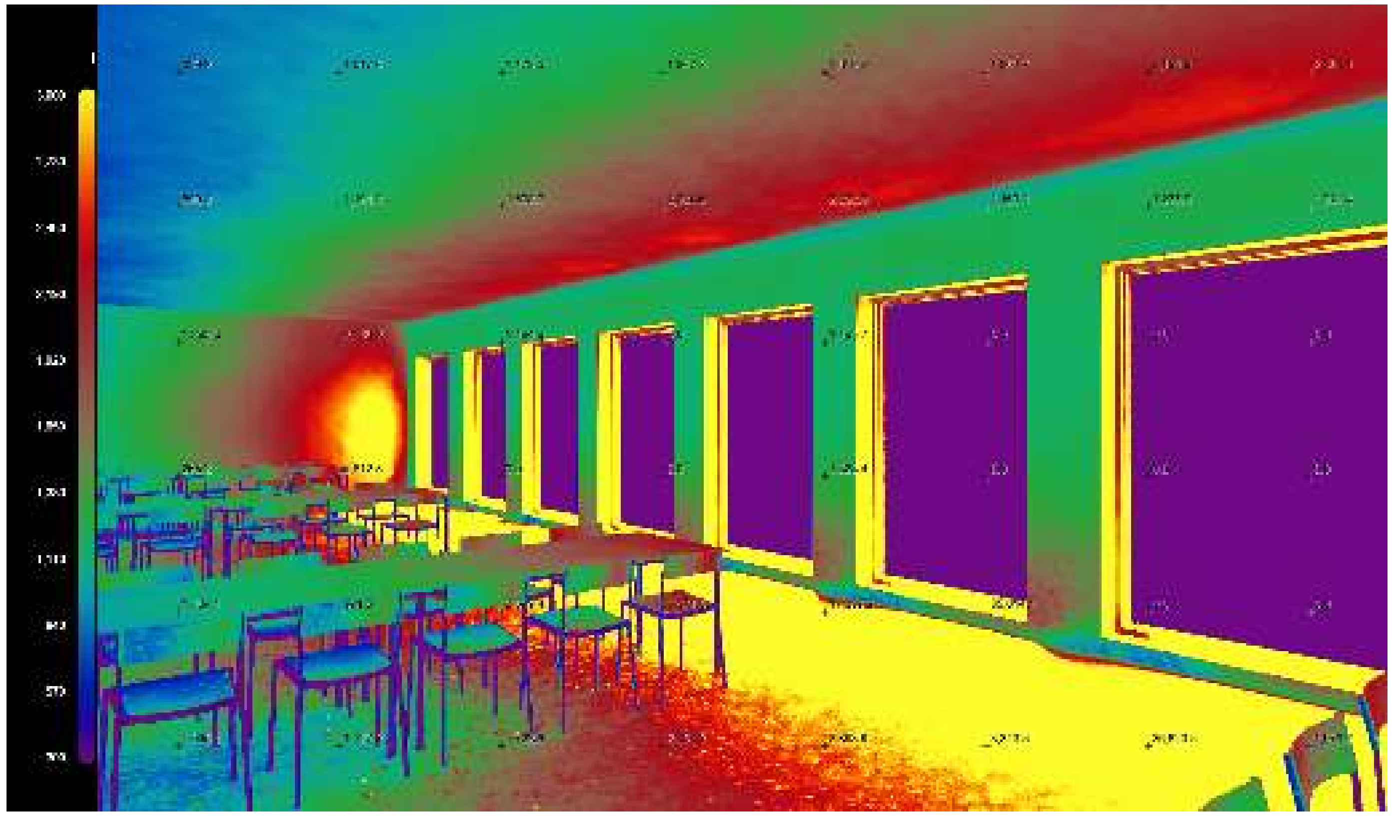


Total Area 307 SQ.M.
Selected Area 162.71 SQ.M.

53.01 % of total area

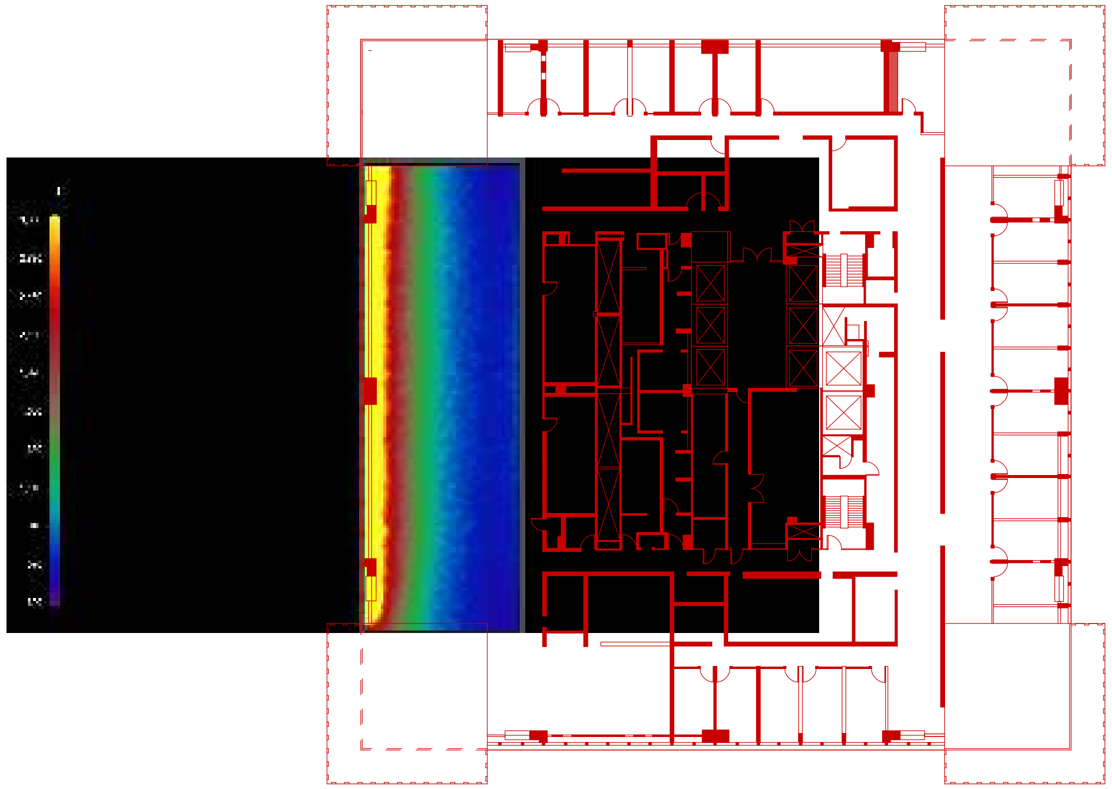
21 March
3 PM

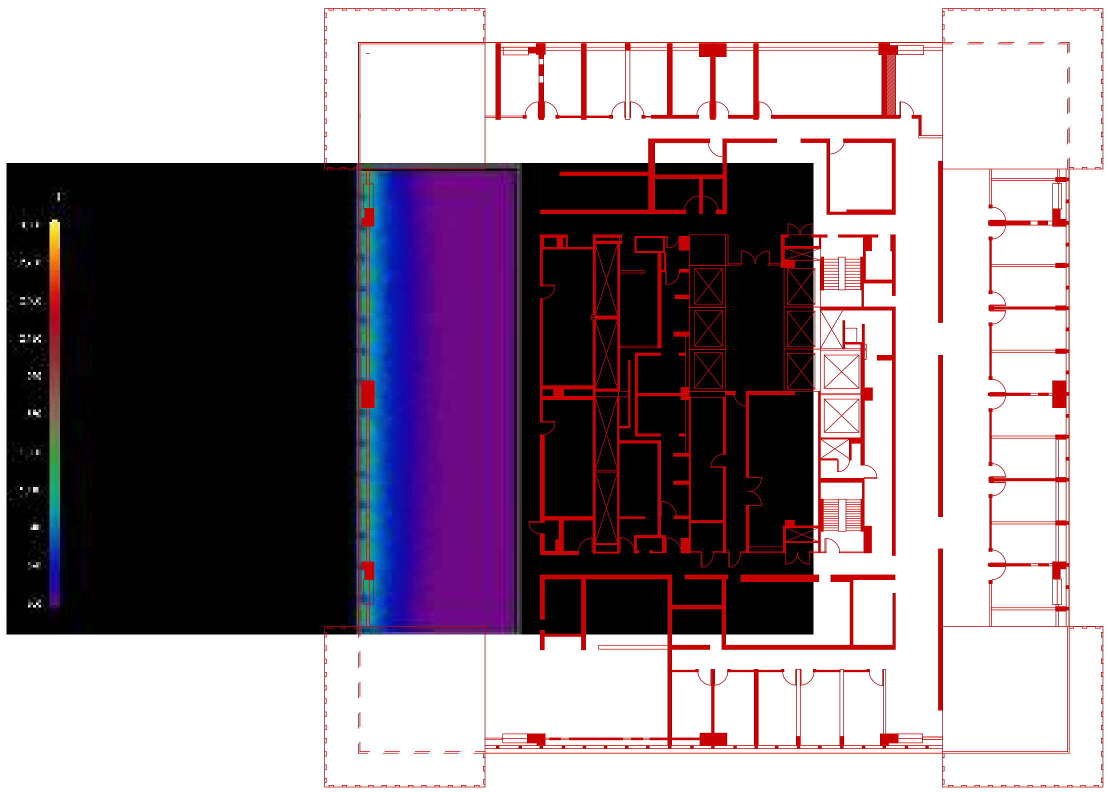


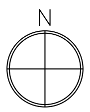


Total Area 307 SQ.M.
Selected Area 209 SQ.M.

68.08 % of total area





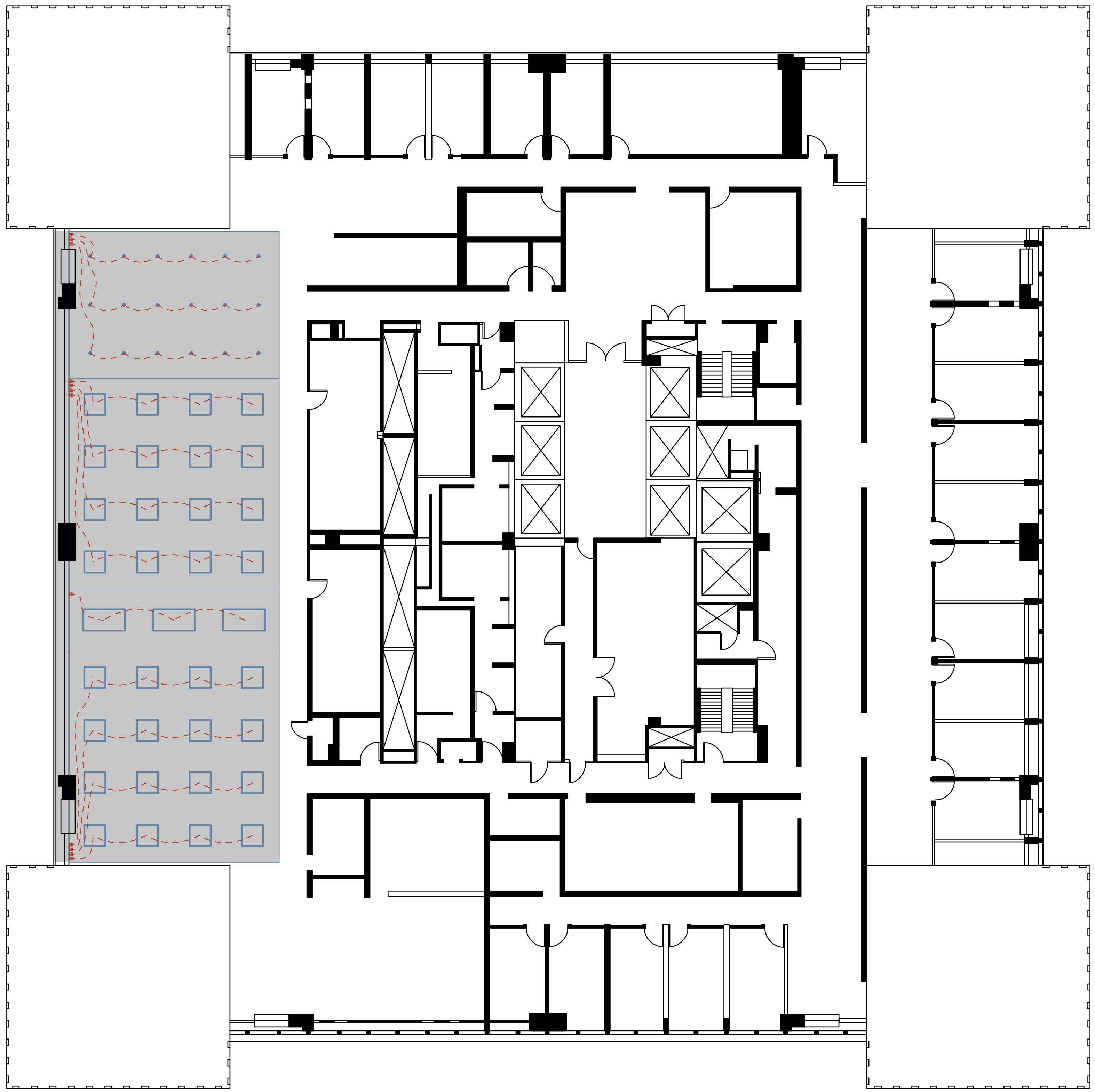


PLAN
SCALE 1:500

The updated design features a modification where the number of windows is reduced, and the size of each window is increased, with wider gaps between them. This adjustment is analyzed by comparing the illuminance levels at 9 AM and 3 PM.

At 9 AM, daylight enters the room in a softer, more diffused manner, with 53.01% of the 307 SQ.M. area receiving daylight, as indicated by the cooler tones of purples and blues on the heatmap. By 3 PM, the sunlight is more intense, casting stronger beams into the space. Despite the increased intensity, 68.08% of the room (209 SQ.M.) is illuminated in a way that prevents harsh glare or overexposure, shown by a balanced distribution of yellow, green, and red hues on the surfaces.

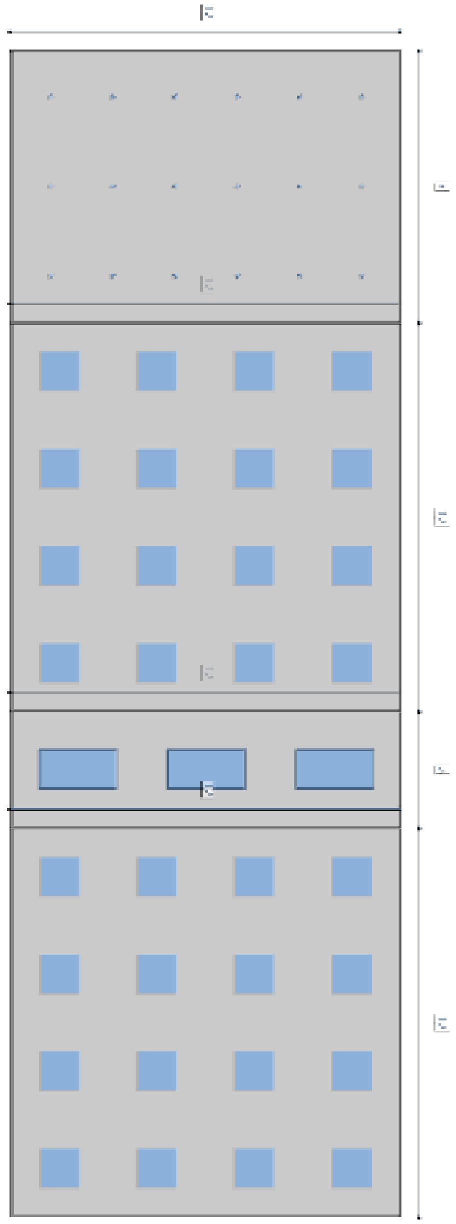
These results demonstrate that the design change has effectively optimized the natural lighting in the room. The larger, well-spaced windows provide adequate daylight coverage throughout the day while minimizing direct solar heat gain and visual discomfort, achieving a comfortable and energy-efficient lighting balance.

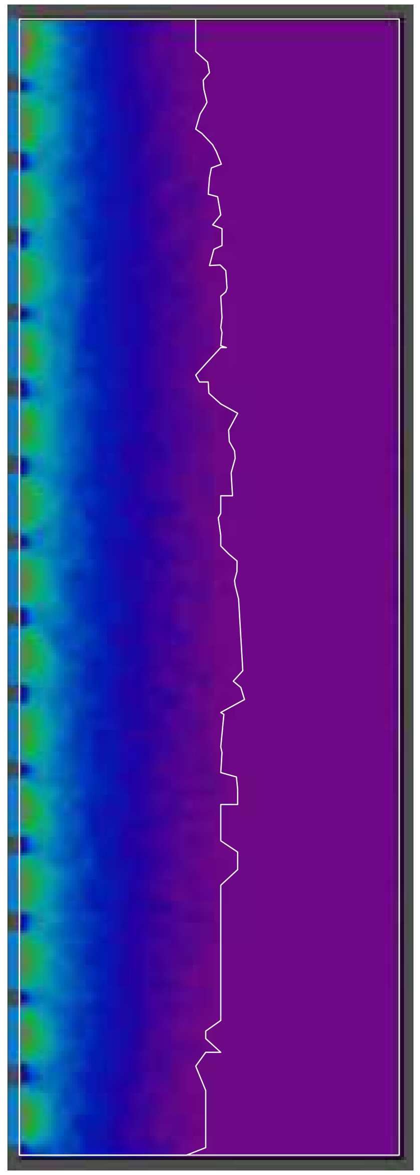


LIGHTING SELECTED ZONE

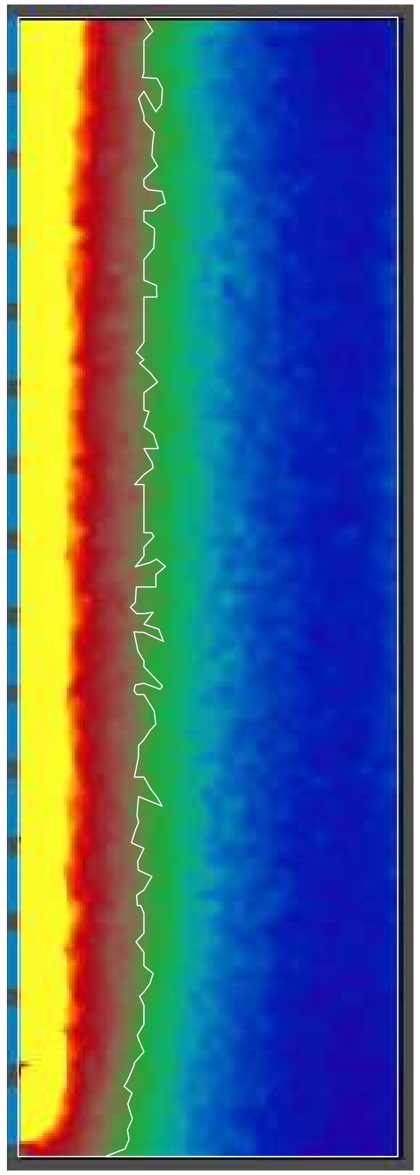
SCALE 1: 250

Zone 1
Open Plan Office



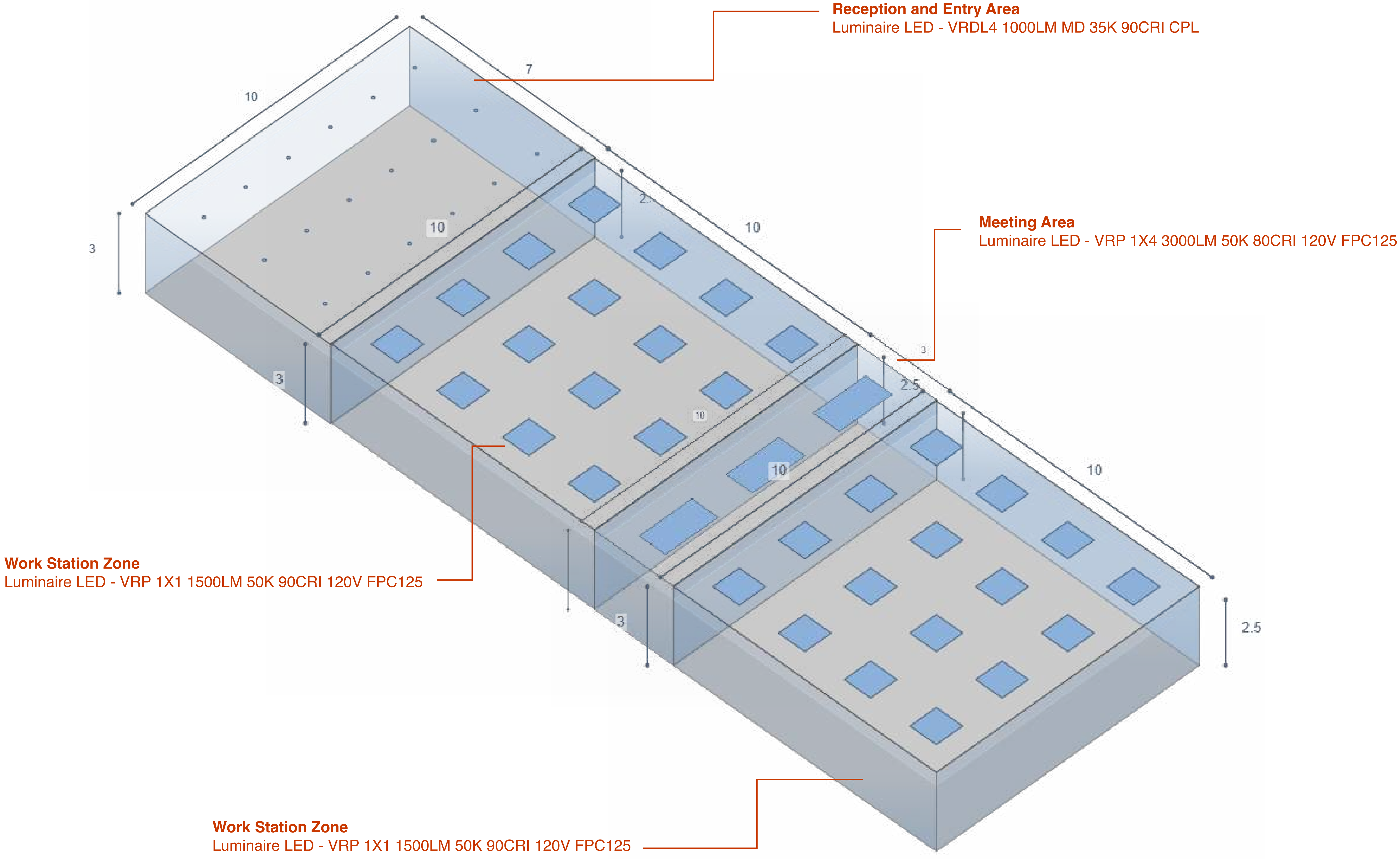


53.01 % of total area
21 March
9 AM



68.08 % of total area
21 March
3 PM

LIGHTING SIMULATION



LIGHTING ZONE

Calculation Results

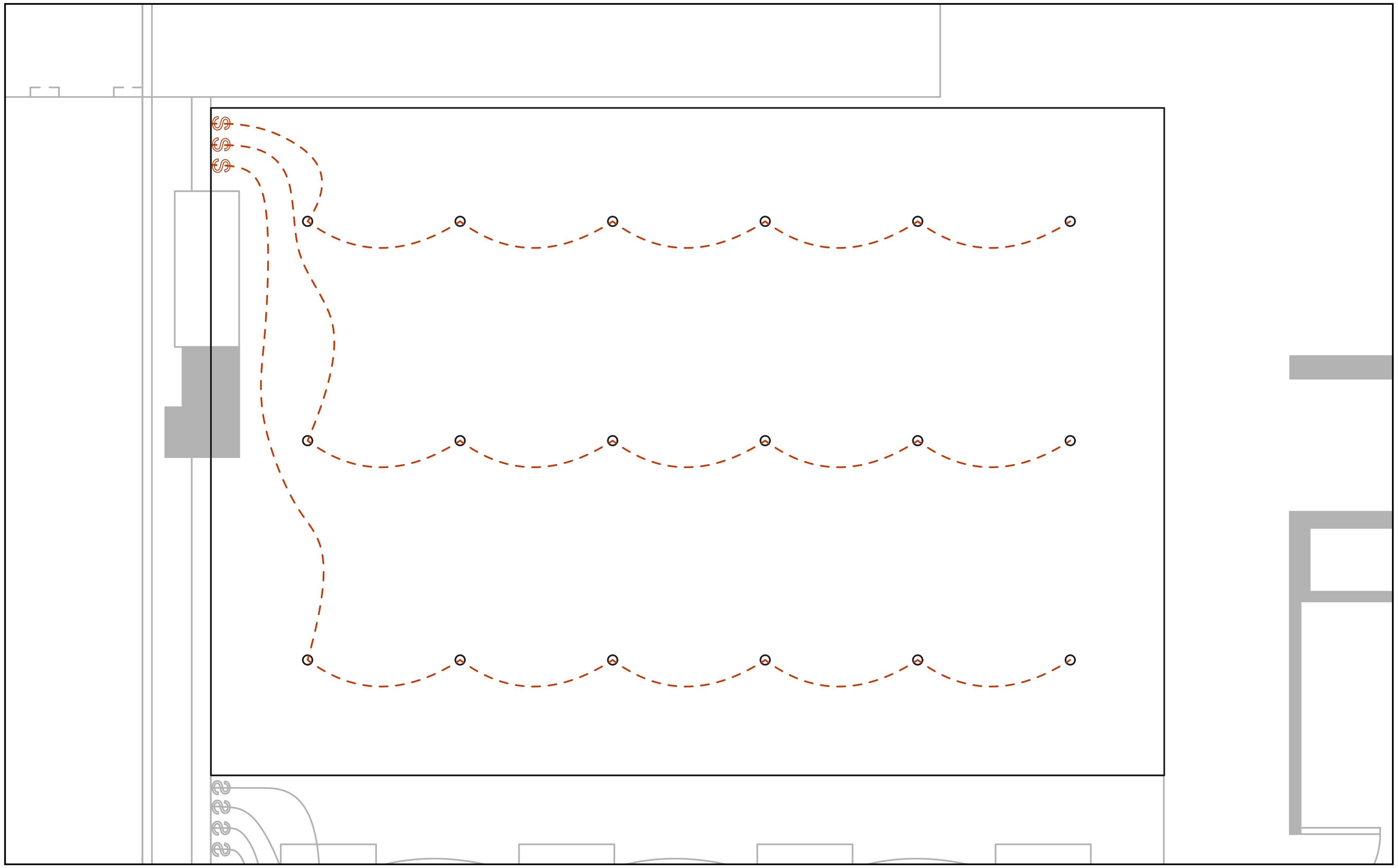
Illuminance	314 lux
Power Density	3.45 W/meters²
Quantity	18

Spacing Results

Spacing	2.3 x 1.6 meters
Arrangement	3 x 6
Offset X	1.15 meters
Offset Y	0.95 meters

Room Summary

Length	7 meters
Width	10 meters
Height	3 meters
Workplane Reflectances	2.5 meters
Ceiling	80 %
Walls	70 %
Floor	40 %



VRDL4 1000LM MD 35K 90CRI CPL

Light Loss Factor	1		
Lamp Lumens	925	Wattage	13.4 Watts
Suspension Length	0 meters		
Lamp Quantity	1	CU	1.32

Reception and Entry Area

Luminaire LED - VRDL4 1000LM MD 35K 90CRI CPL

SCALE 1: 500

Calculation Results

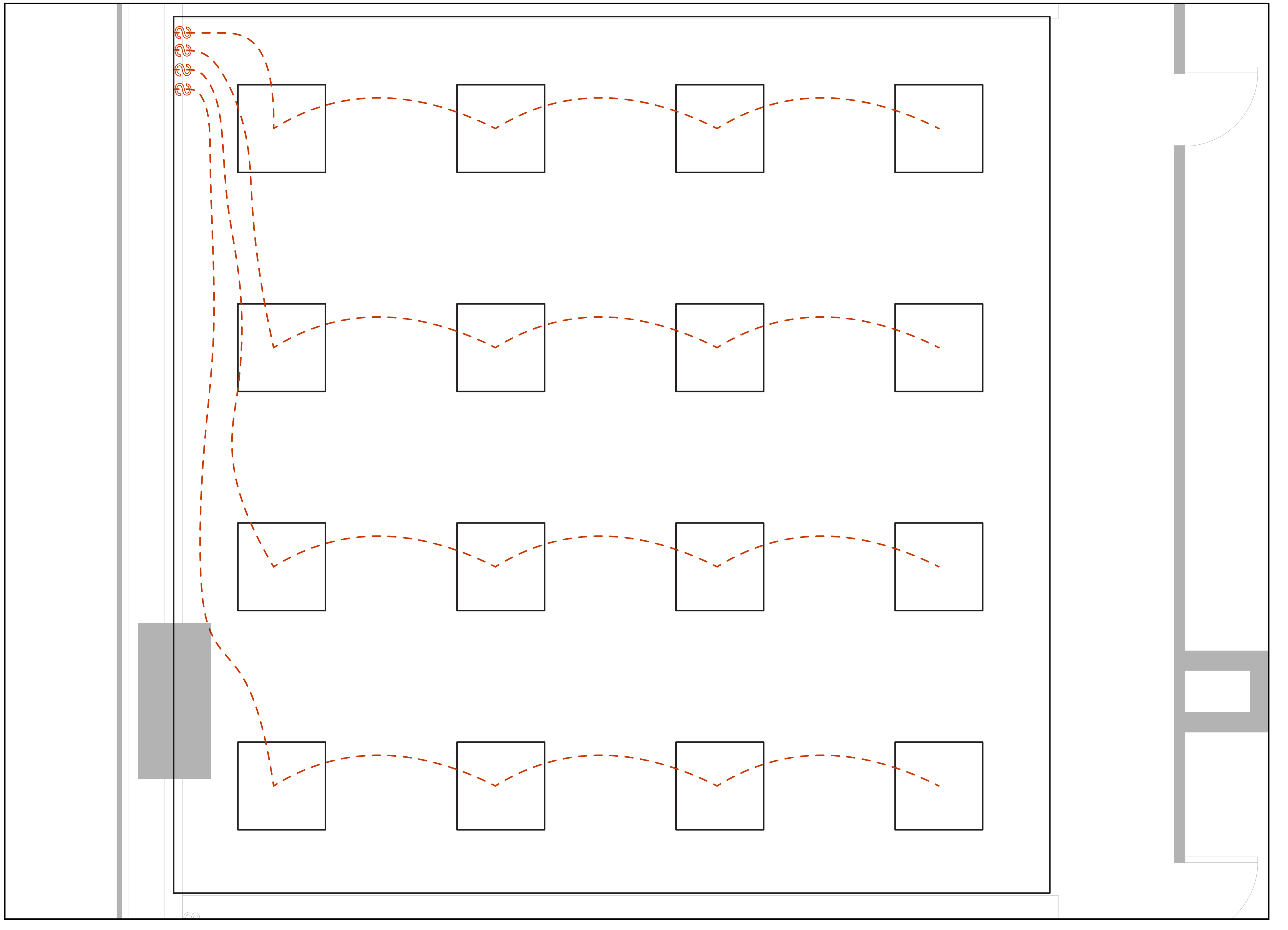
Illuminance	300 lux
Power Density	2.34 W/meters²
Quantity	16

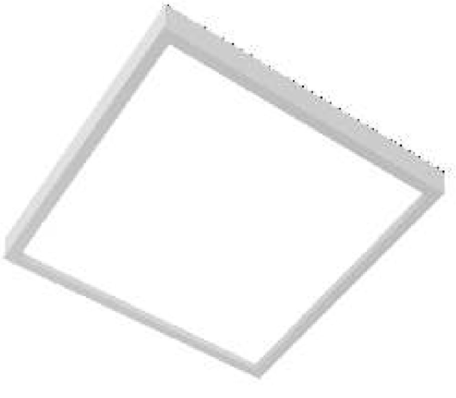
Spacing Results

Spacing	2.5 x 2.5 meters
Arrangement	4 x 4
Offset X	0.75 meters
Offset Y	0.75 meters

Room Summary

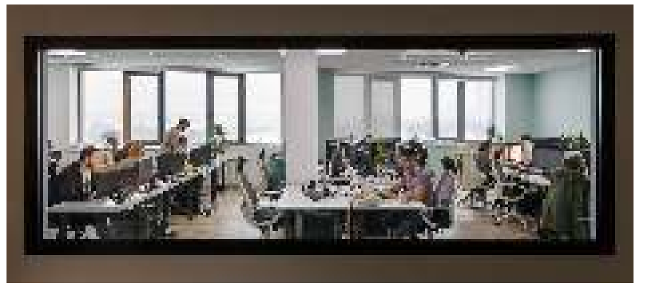
Length	10 meters
Width	10 meters
Height	3 meters
Workplane Reflectances	2.5 meters
Ceiling	80 %
Walls	70 %
Floor	40 %

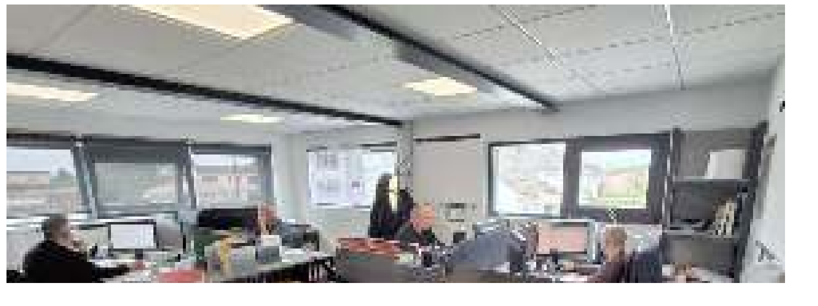




VRP 1X1 1500LM 50K 90CRI 120V FPC125

Light Loss Factor	1
Lamp Lumens	1418 Wattage 14.6 Watts
Suspension Length	0 meters
Lamp Quantity	1 CU 1.32





Work Station Zone

Luminaire LED - VRP 1X1 1500LM 50K 90CRI 120V FPC125

SCALE 1: 500

Calculation Results

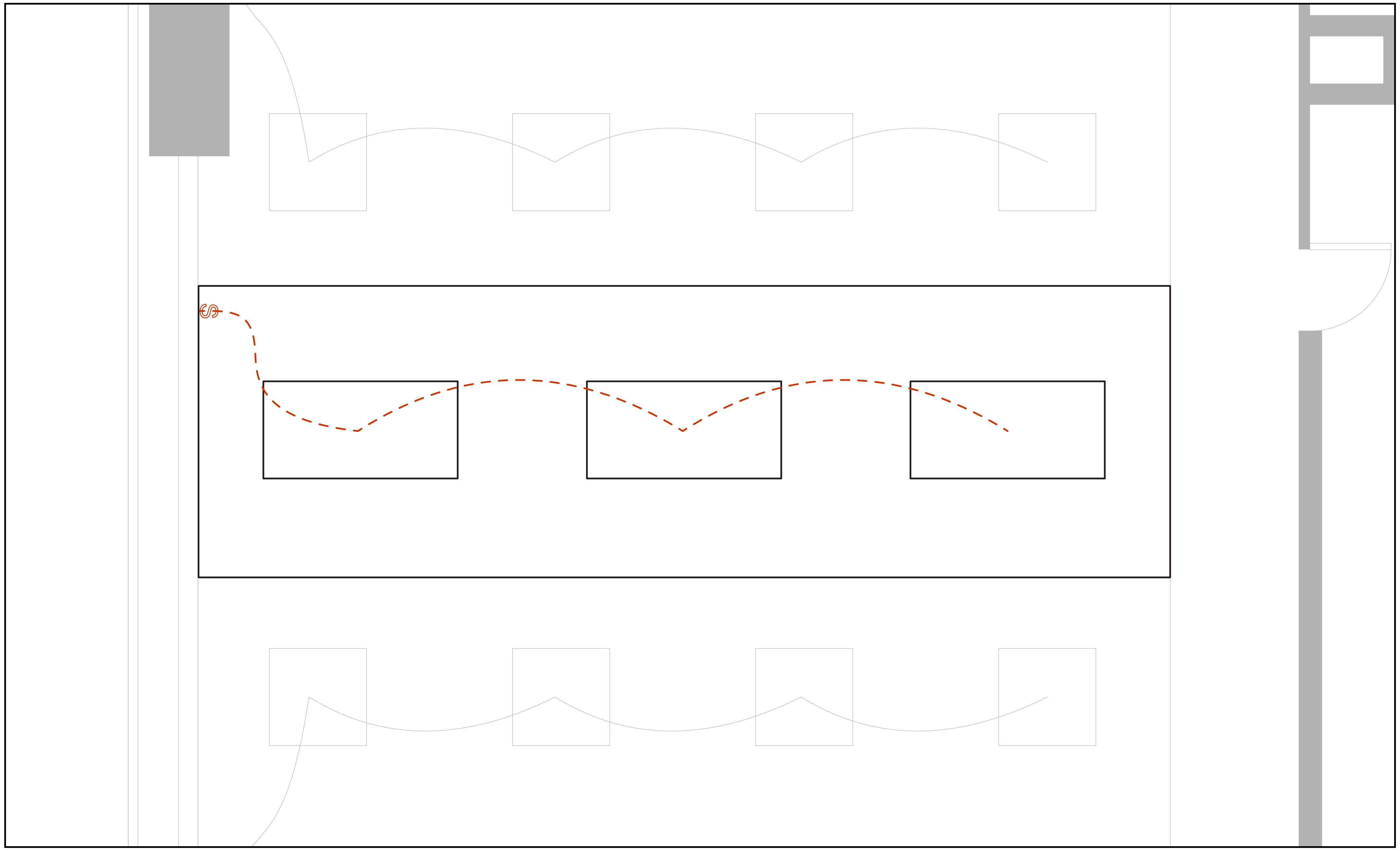
Illuminance	370 lux
Power Density	2.36 W/meters²
Quantity	3

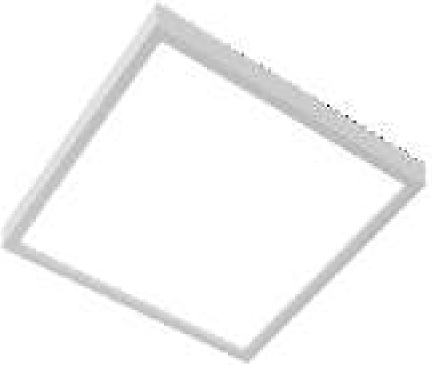
Spacing Results

Spacing	3 x 3.33 meters
Arrangement	1 x 3
Offset X	1 meters
Offset Y	0.7 meters

Room Summary

Length	3 meters
Width	10 meters
Height	3 meters
Workplane Reflectances	2.5 meters
Ceiling	80 %
Walls	70 %
Floor	40 %





VRP 1X4 3000LM 50K 80CRI 120V FPC125

Light Loss Factor	1	
Lamp Lumens	3099 Wattage 23.6 Watts	
Suspension Length	0 meters	
Lamp Quantity	1 CU	1.19

Meeting Area
Luminaire LED - VRP 1X1 1500LM 50K 90CRI 120V FPC125

SCALE 1: 500