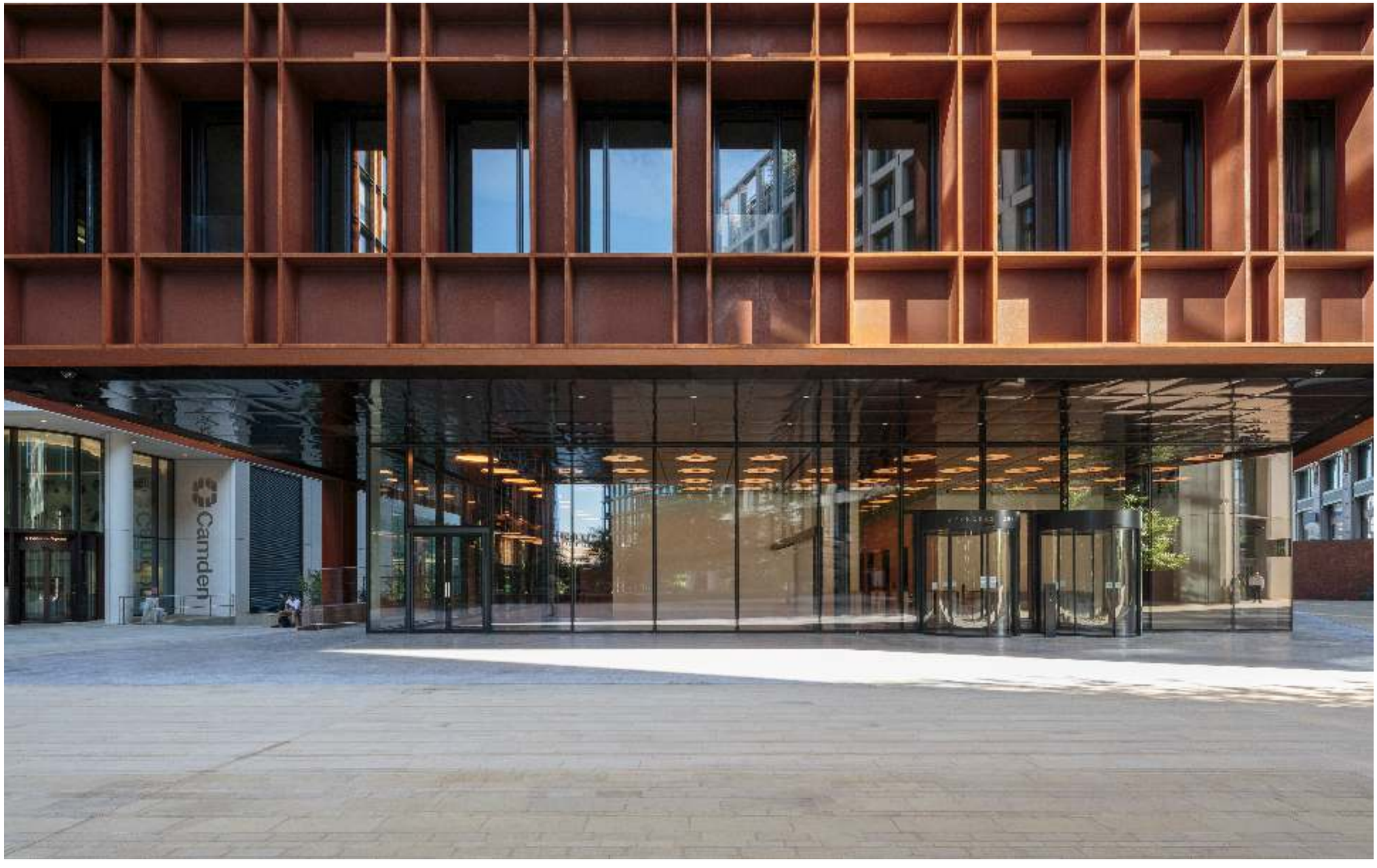
ENVIRONMENTAL TECHNOLOGY II – DAYLIGHTING AND ELECTRIC LIGHTING

4 Pancras Square

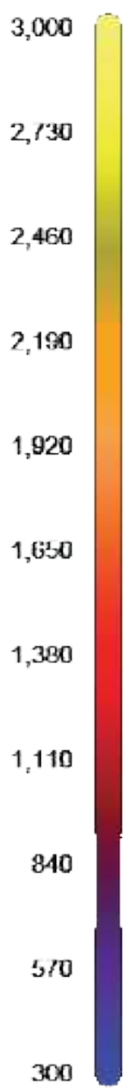
Daylighting and electric lighting



4 Pancras Square

Daylight acess plan analysis:March and September

March



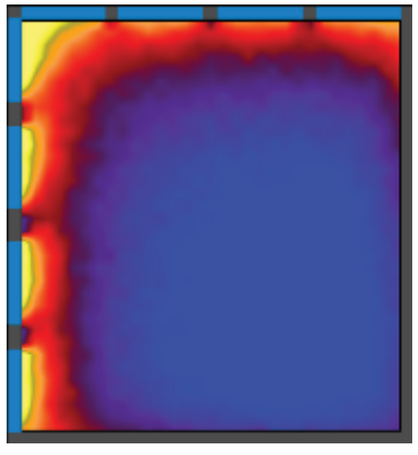
9.00 am

12.00 am

15.00 pm

17.00 pm

September



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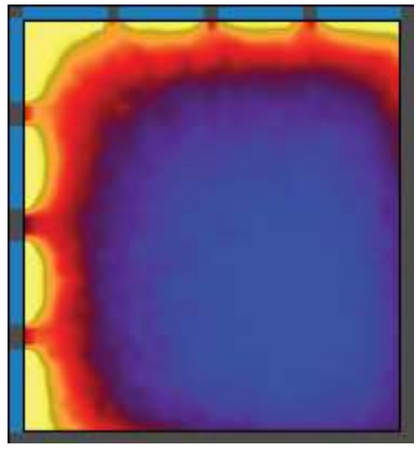

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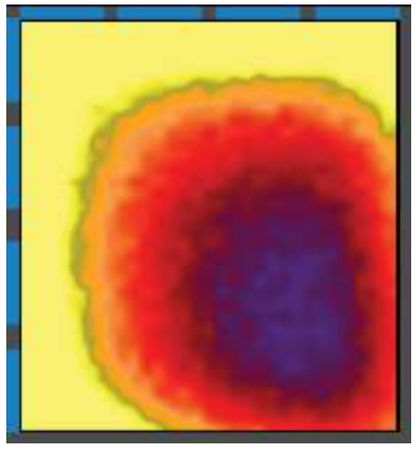

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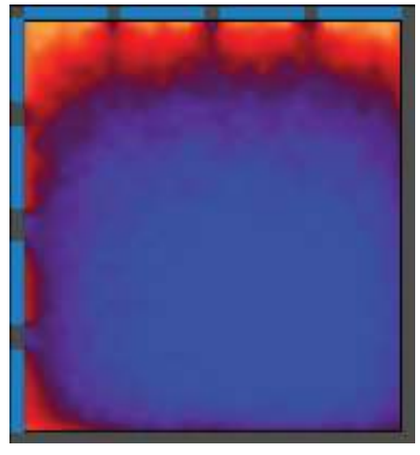
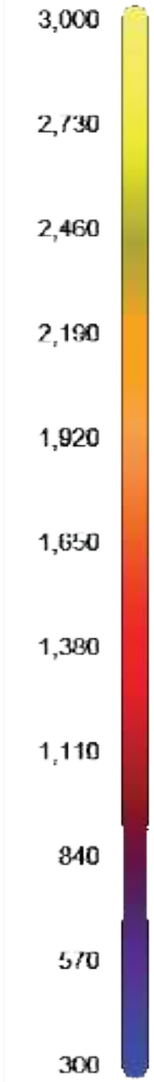


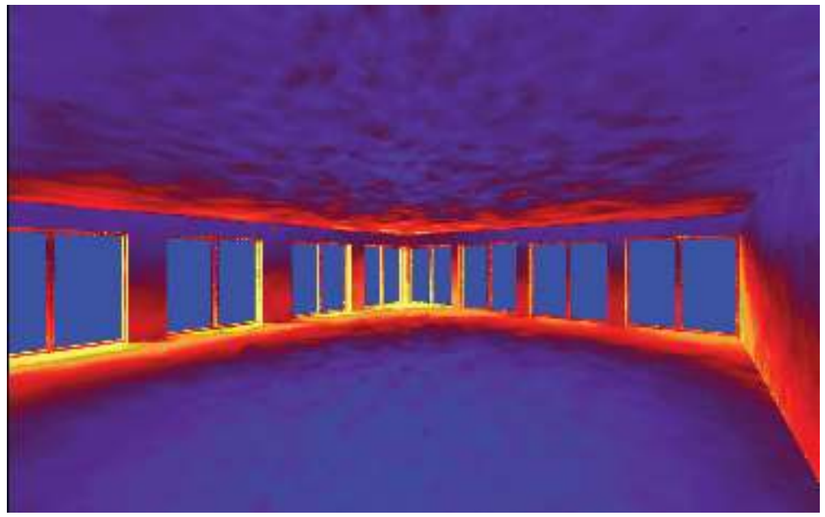
17.00 pm

4 Pancras Square

Daylight acess perspective analysis:March

March





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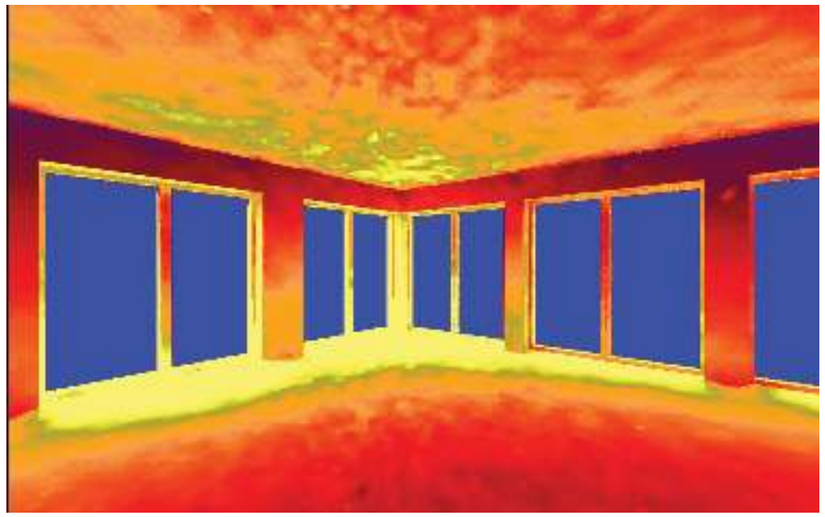

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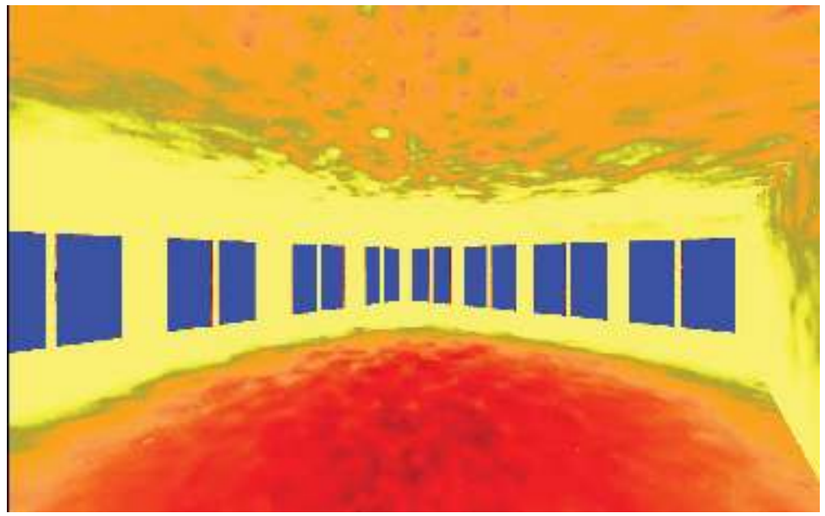

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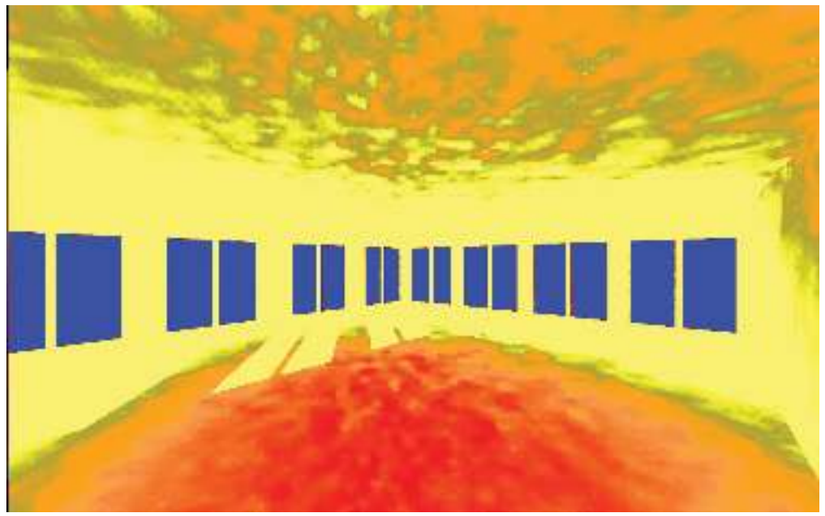
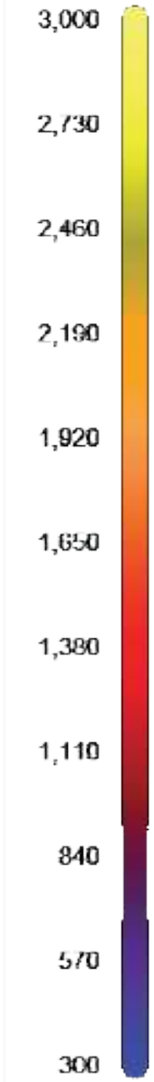


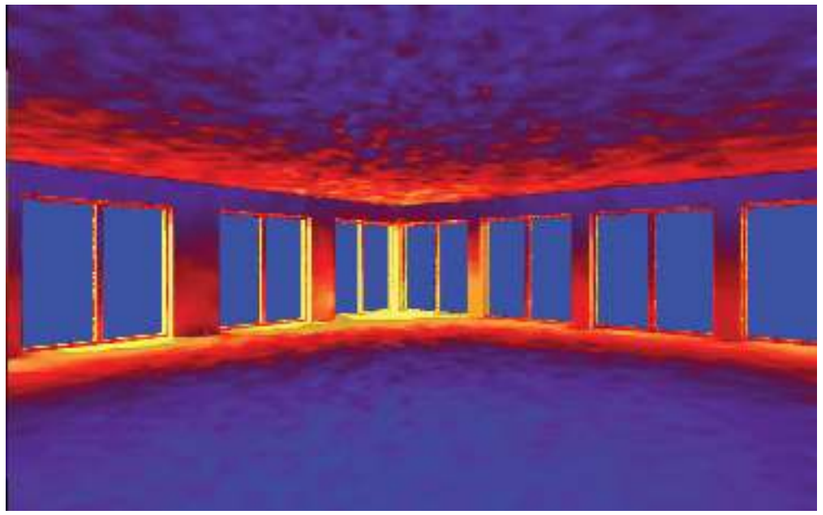
17.00 pm

4 Pancras Square

Daylight acess plan with new facade:September

September





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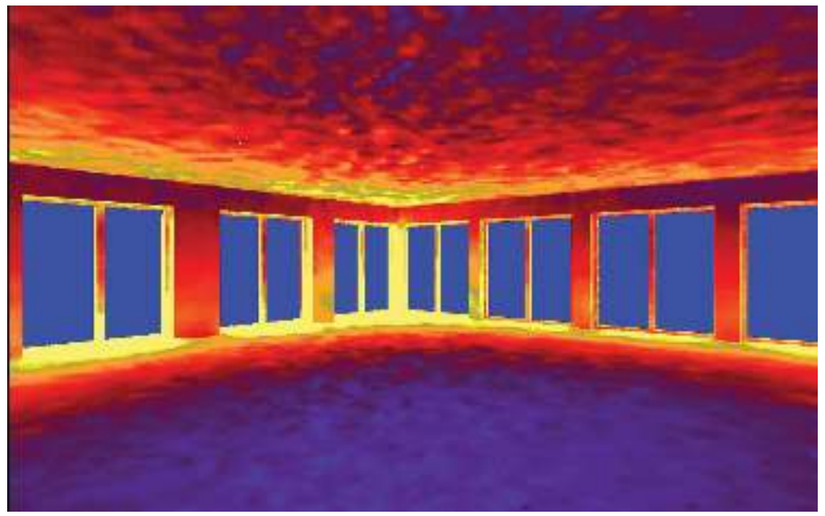

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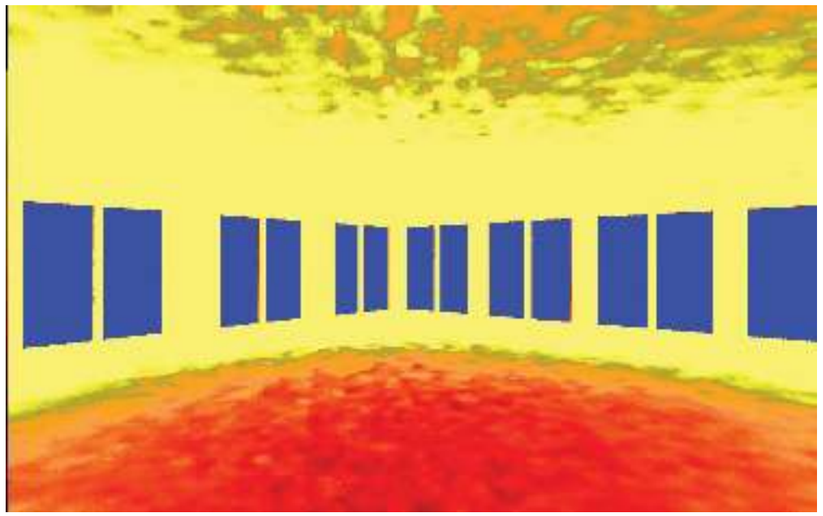

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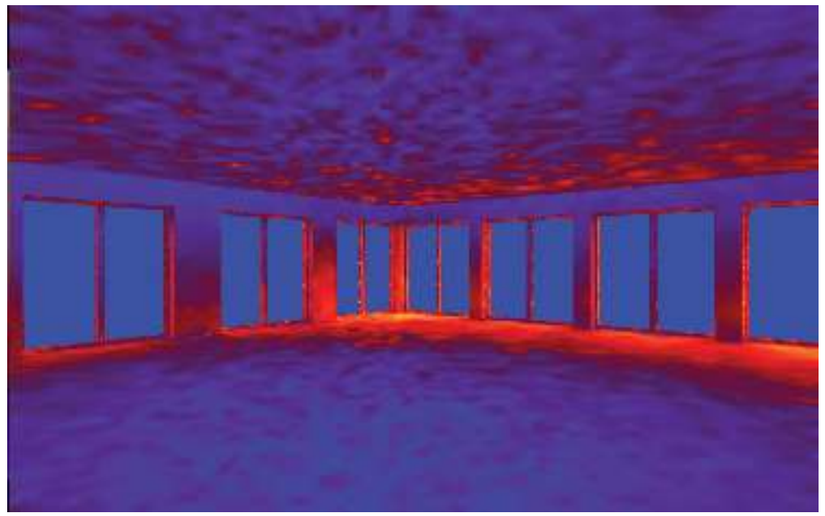
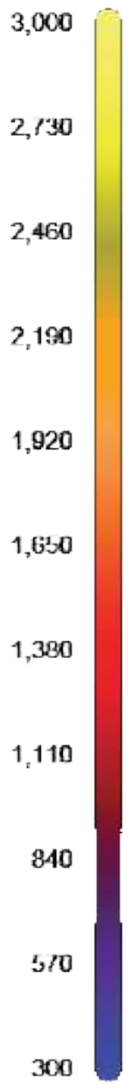


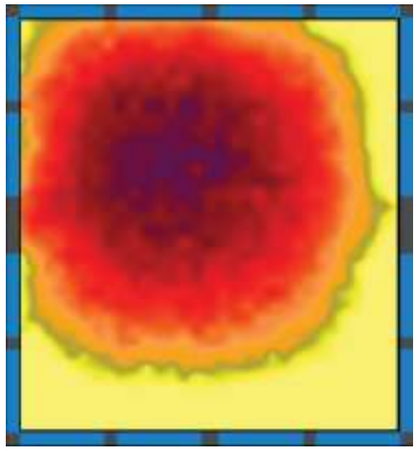
17.00 pm

4 Pancras Square

Daylight acess perspective with new facade:March and September



March



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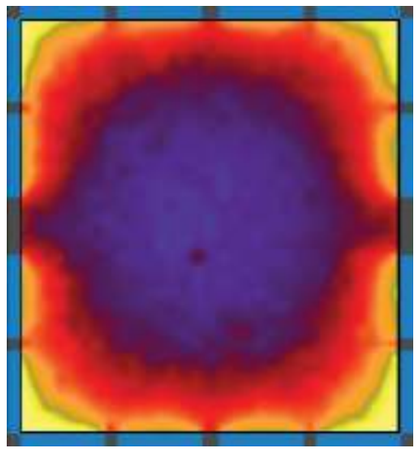

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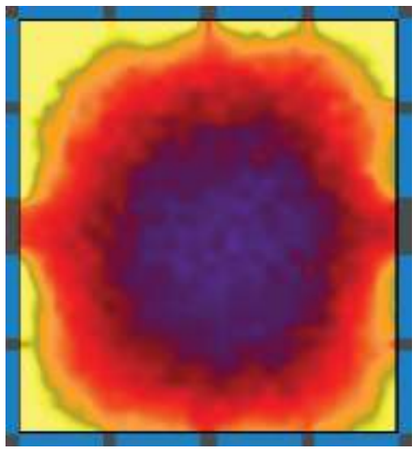

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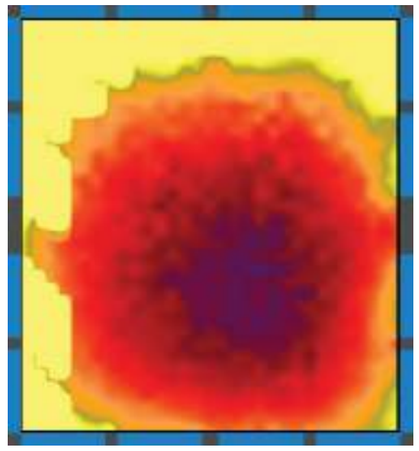

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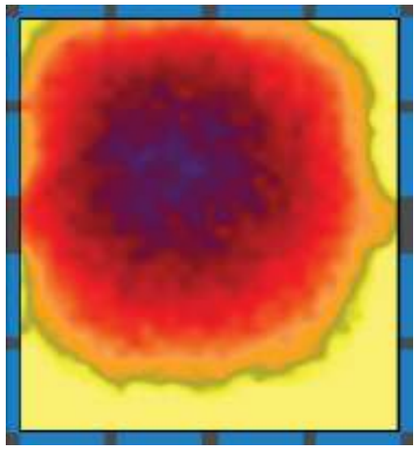
September



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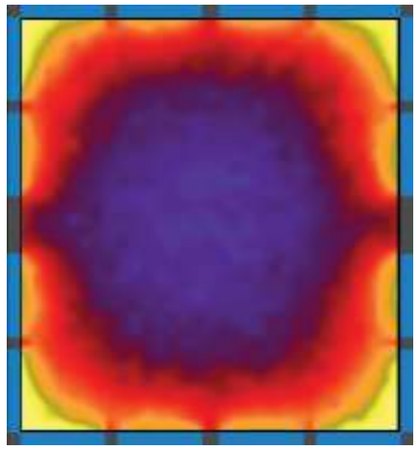

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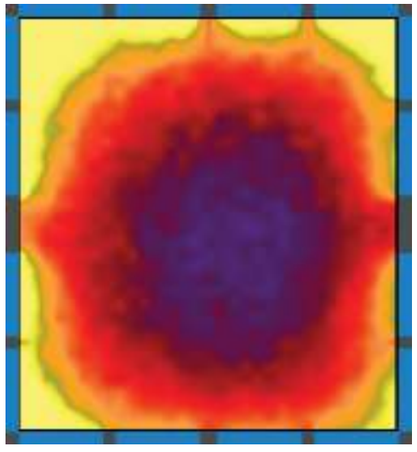

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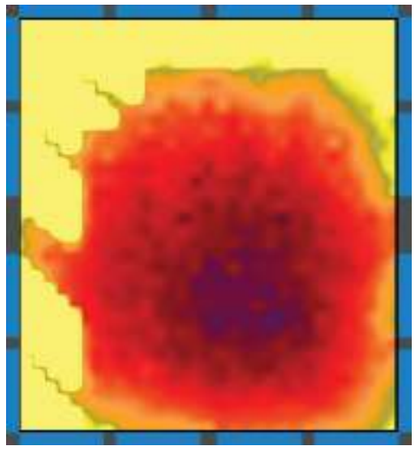
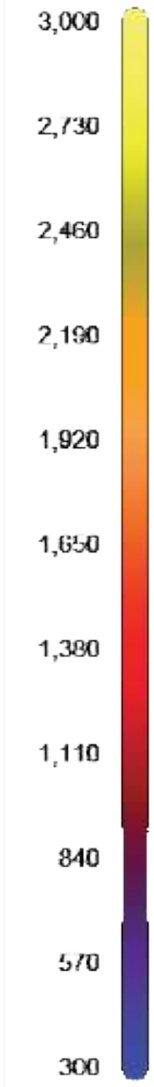


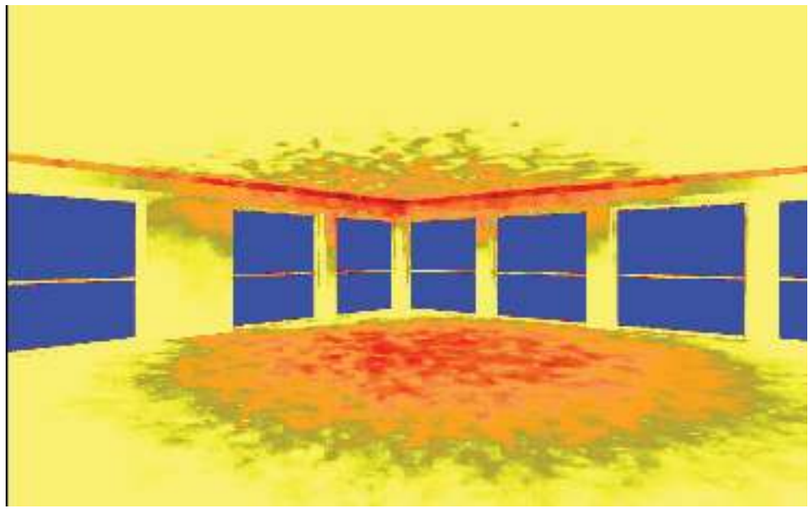
17.00 pm

4 Pancras Square

Daylight acess with new facade perspective analysis:March

March





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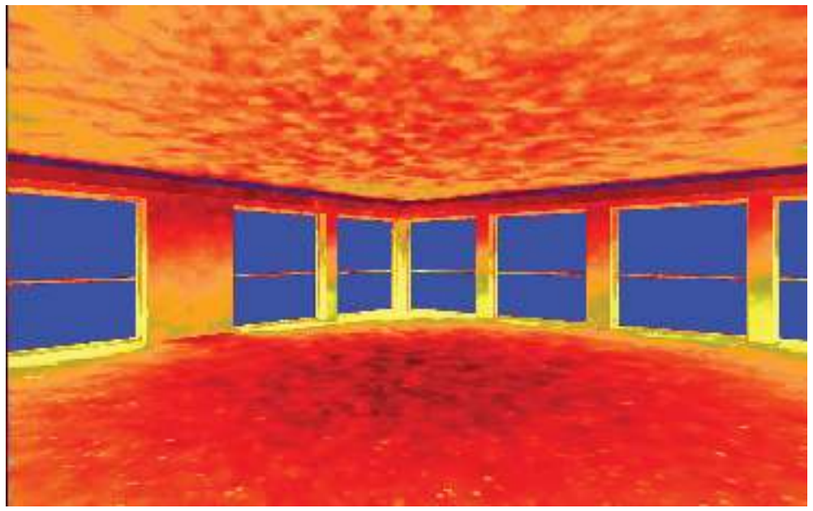

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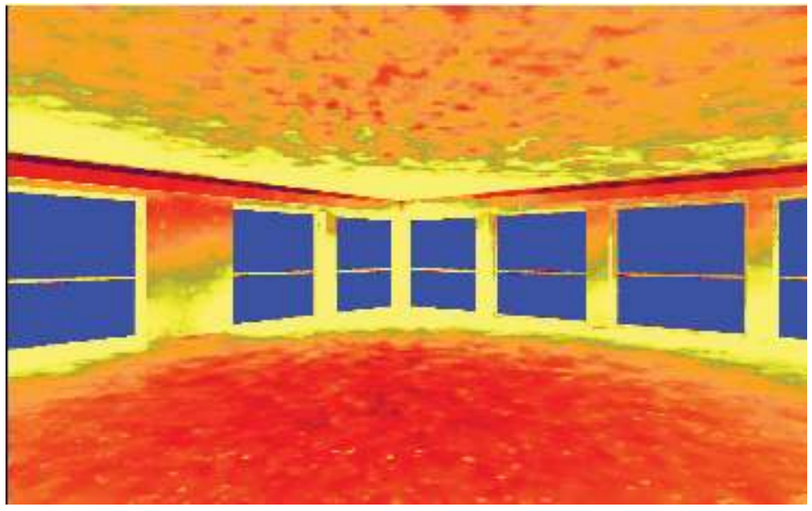

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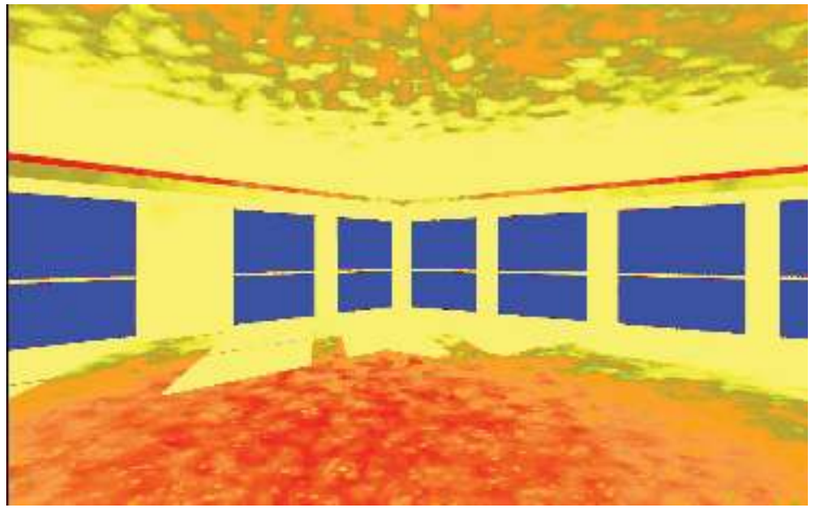
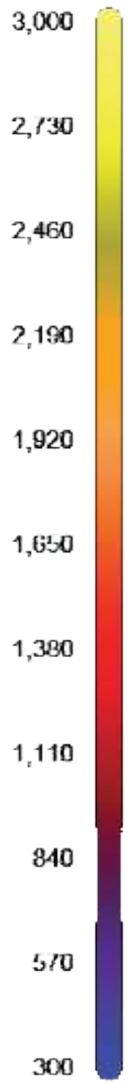


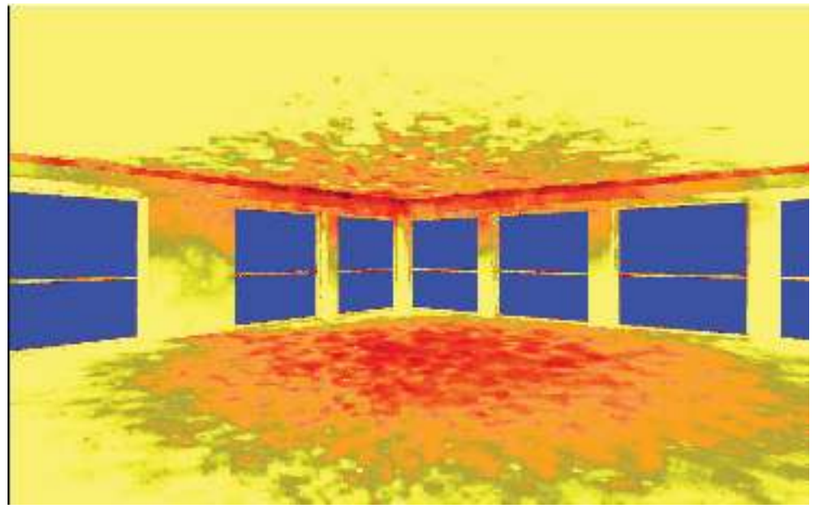
17.00 pm

4 Pancras Square

Daylight acess with new facade perspective analysis:September

September





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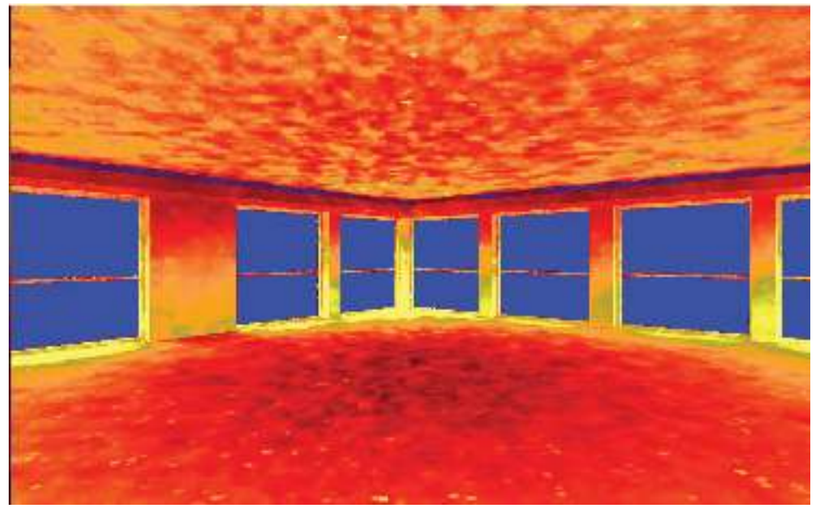

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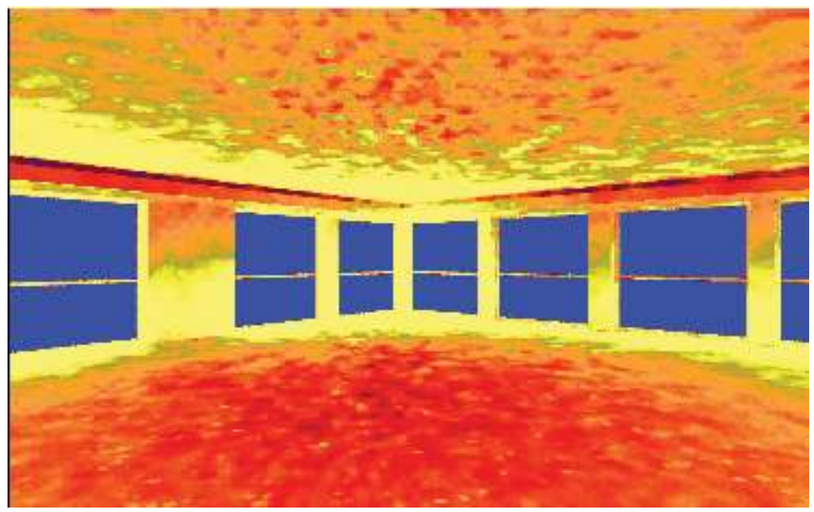

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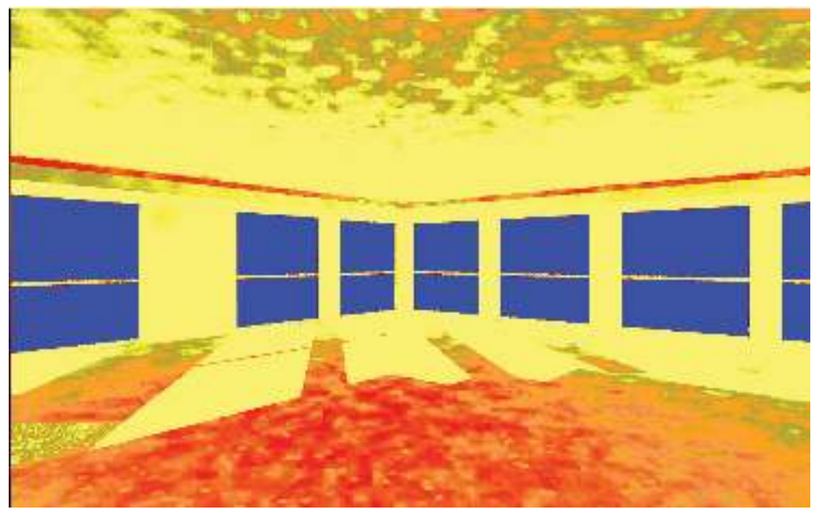
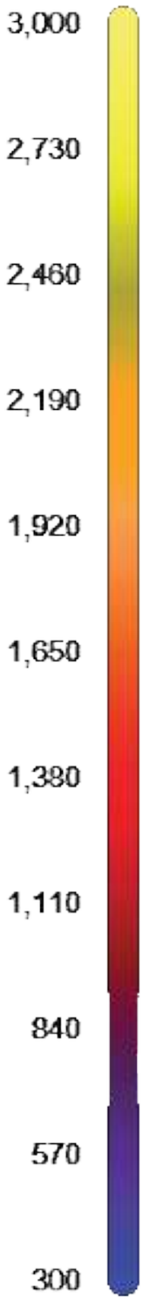
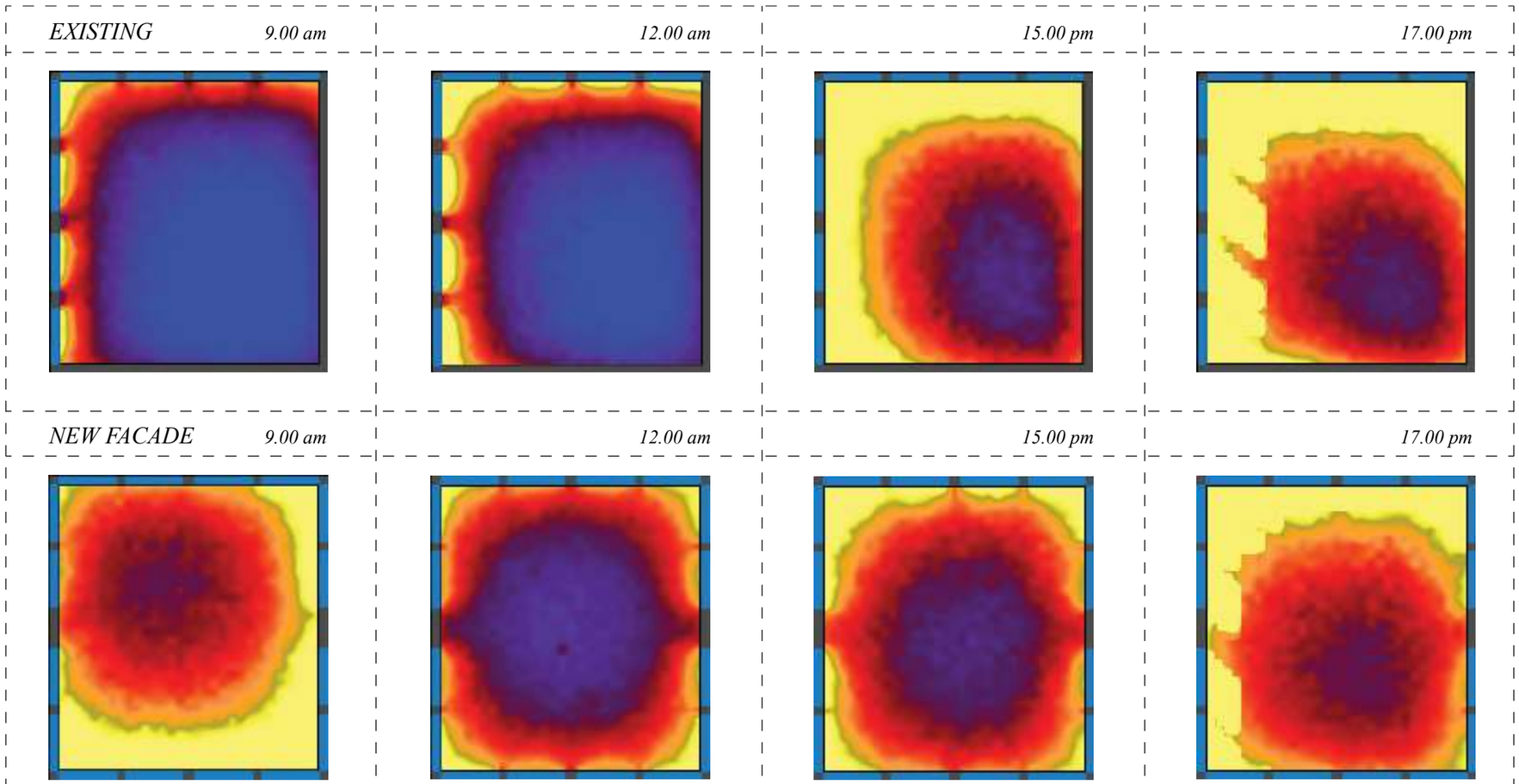


17.00 pm

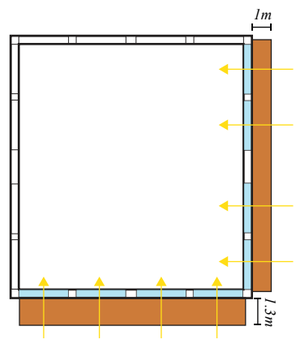
4 Pancras Square

March daylight acess comparision

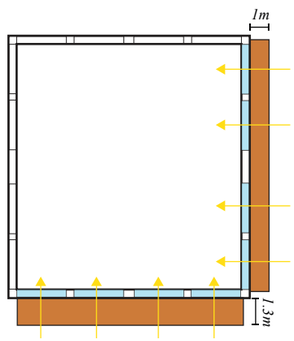




FACADE DETAIL: WINDOWS AND HORIZONTAL OVERHANGS



-windows added to let in sunlight
-horizontal overhang added to control amount of sunlight in the right and bottom



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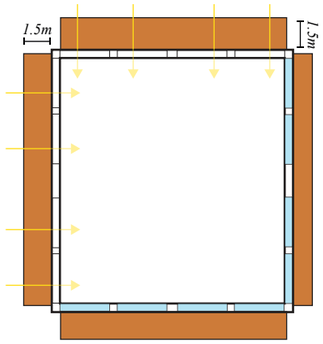
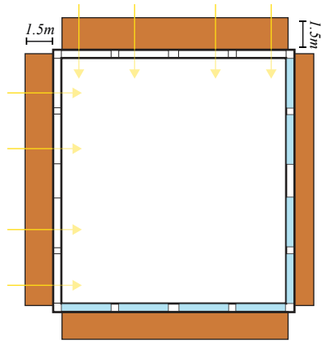


-horizontal overhangs added to block strong sunlight from the top and left side as seen in the yellow zone



-horizontal overhangs added to block strong sunlight from the top and left side as seen in the yellow zone

4 Pancras Square

Electric lighting design concept

Perspective

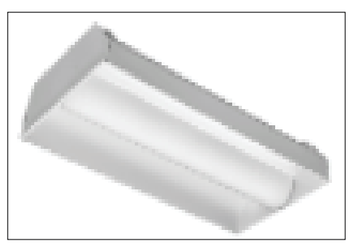
Electric lighting design concept

The lighting design for the 10×10 meter office space with a 3-meter ceiling height is driven by three key principles: visual comfort, energy efficiency, and flexible task support. The aim is to provide optimal illumination for general office work while maintaining compliance with green building standards such as ASHRAE 90.1 and LEED. To achieve uniform light distribution and meet the required 300–500 lux for general office tasks, a combination of recessed luminaires has been selected:

- BLT 2x2 LED troffers are used to deliver broad, diffuse lighting across workstations, minimizing glare and shadows.
- VT 2x4 LED troffers are employed in larger open areas, reducing the total number of fixtures needed while maintaining brightness and visual balance.
- EVO 6" round downlights are strategically placed in circulation and breakout zones, offering accent lighting and reinforcing a sense of spatial hierarchy.

Lighting options

Holophane
HVTS 1X4 6000LM
80CRI 30K COL
MVOLTCD



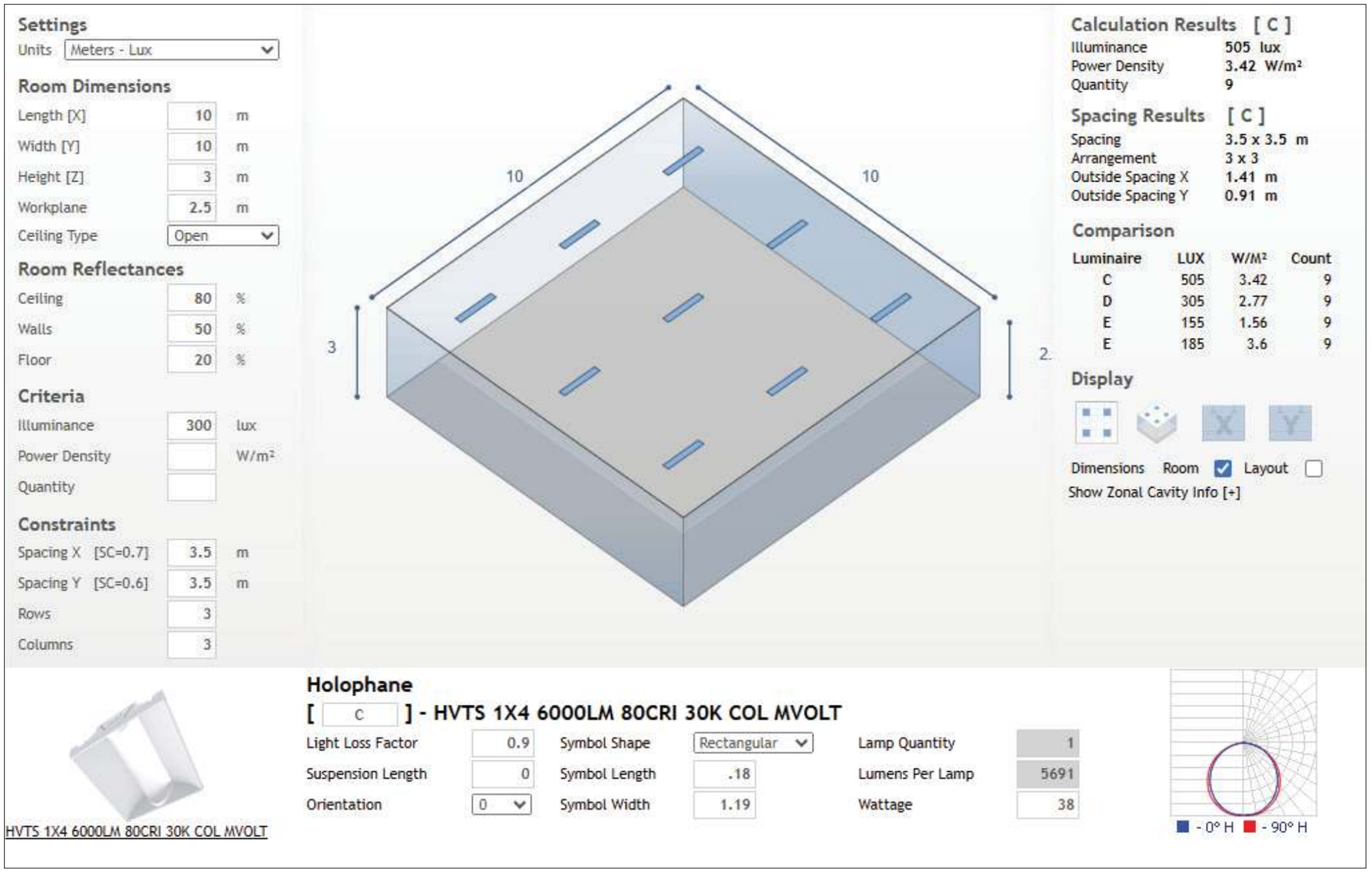
Aculux
- AX2 D G2 15LM 30K 80CRI
15D 2DP CD

Juno Lighting
- WF8 SWW5 90CRI _ 4000K

4 Pancras Square

Electric lighting design option 1

Lighting calculation:

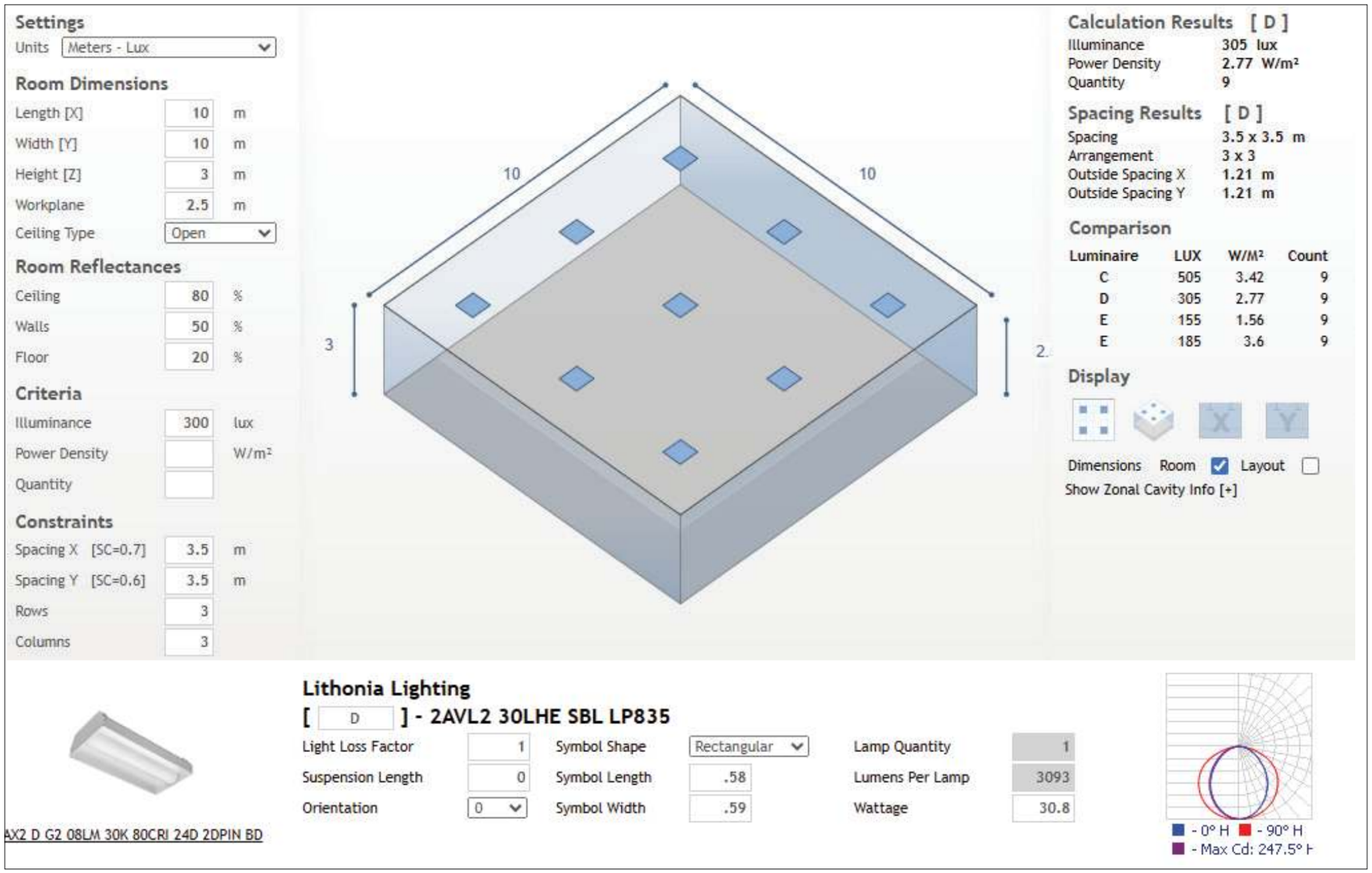


Reference:

4 Pancras Square

Electric lighting design option 2

Lighting calculation:

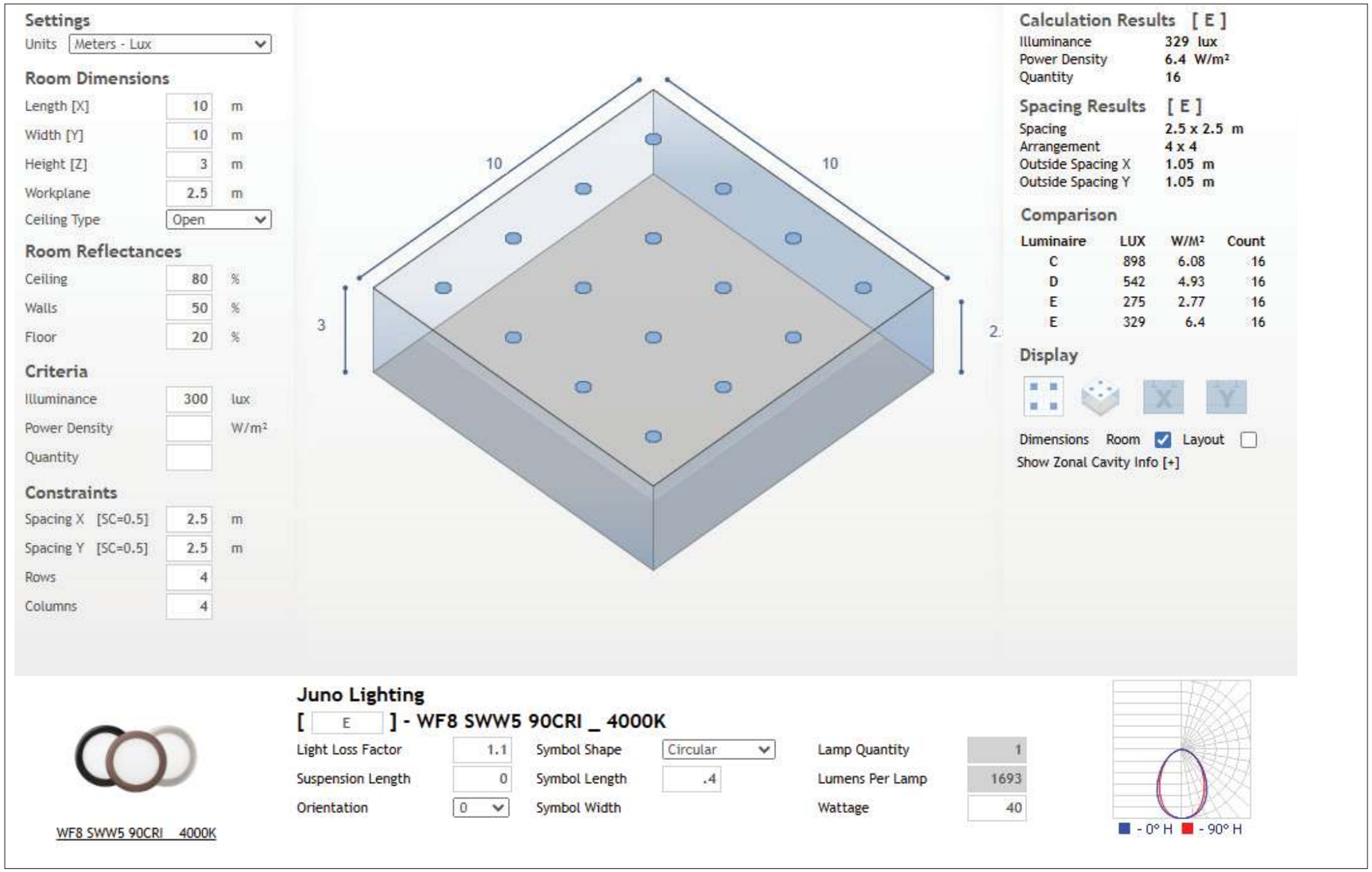


Reference:

4 Pancras Square

Electric lighting design option 3

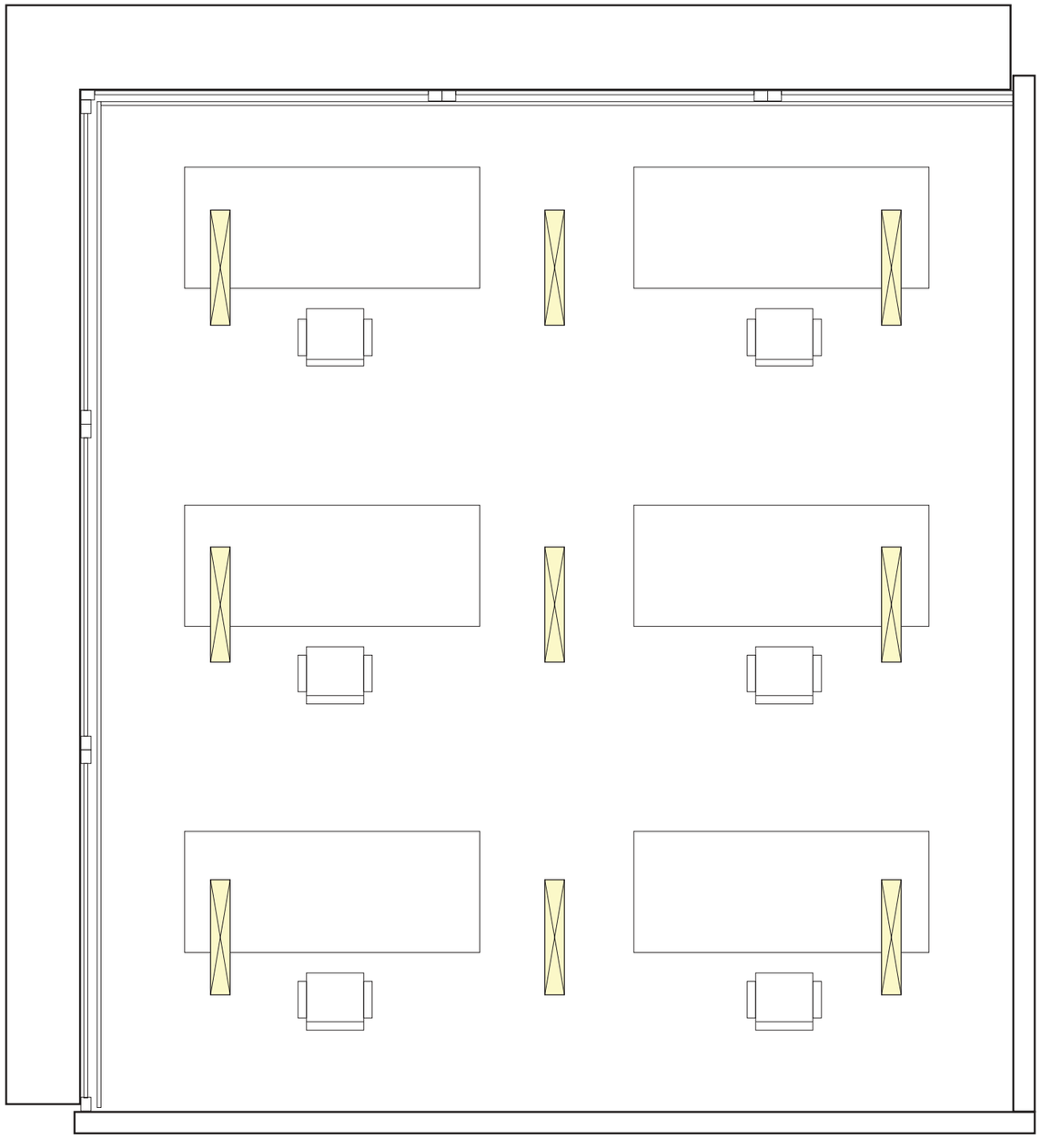
Lighting calculation:



Reference:

4 Pancras Square

Electric lighting design option 1 plan



Holophane
HVTS 1X4 6000LM 80CRI 30K COL MVOLTCD

Visualization

Light specification

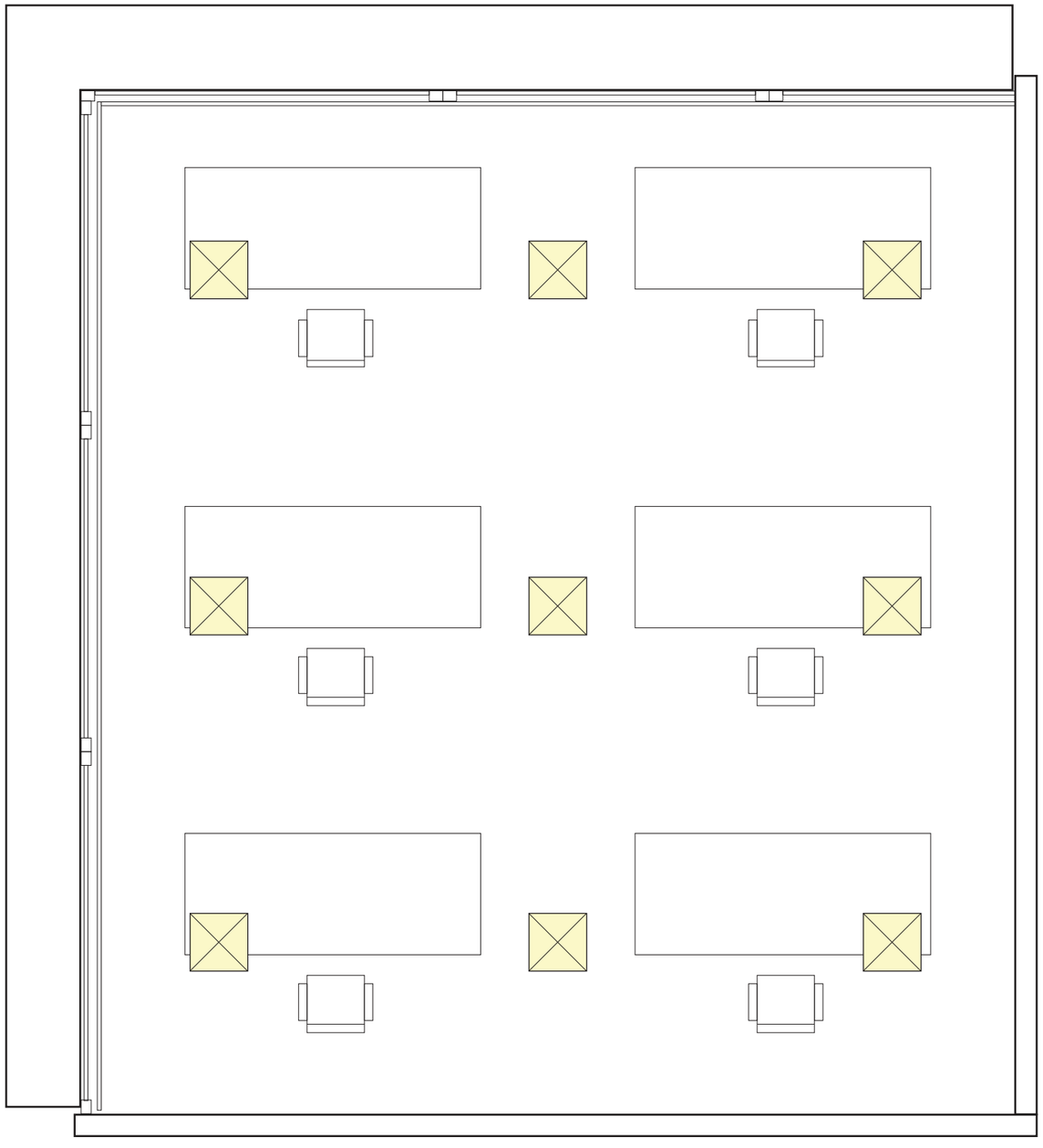
Holophane
HVTS 1X4 6000LM 80CRI
30K COL MVOLTCD

2x2	2x4
Length: 23-3/4 (60.3)	Length: 47-3/4 (121.2)
Width: 23-3/4 (60.3)	Width: 23-3/4 (60.3)
Depth: 4 (10.2)	Depth: 4 (10.2)

All dimensions are inches (centimeters) unless otherwise specified.

4 Pancras Square

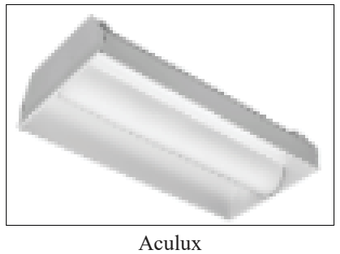
Electric lighting design option 2 plan



Aculux
- AX2 D G2 15LM 30K 80CRI 15D 2DP

Visualization

Light specification



Aculux
- AX2 D G2 15LM 30K 80CRI 15D 2DP CD

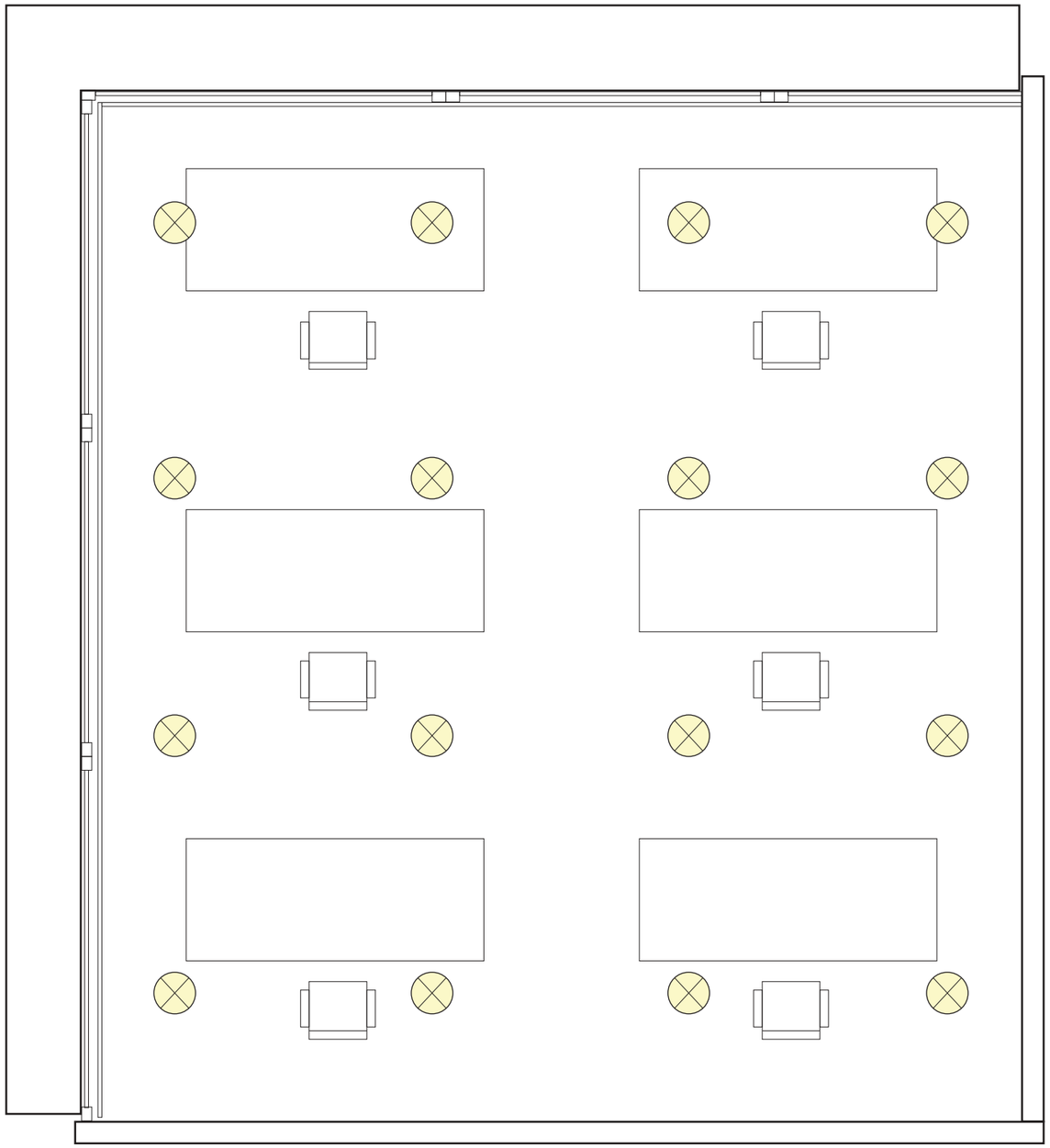
PERFORMANCE

Lumen Package	Watts in	Delivered Lumens	Efficacy (LPW)
08LM	10	746	75
12LM	15	1139	89
15LM	17	1503	91

Performance with 2DP trim at 3000K (80CRI)
Actual performance may differ as a result of end-user environment and application.
All values are nominal typical values, measured after laboratory conditions at 25°C

4 Pancras Square

Electric lighting design option 3 plan



Juno Lighting
- WF8 SWW5 90CRI _ 4000K

Visualization

Light specification

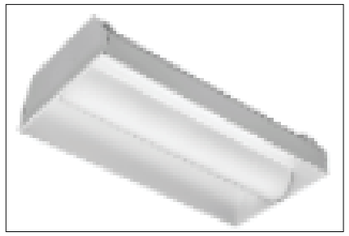
Juno Lighting
- WF8 SWW5 90CRI _ 4000K

Performance

Delivered Lumens	670L (WF4), 970L (WF6) and 1640L (WF8) Nominal at 3000K
LED Color Temperature	Switchable White (27K, 30K, 35K, 40K, 50K) Default set at 3000K
CRI	90+
Voltage	Dedicated 120V
Dimming	Dimmable to 10% with triac (120v)

4 Pancras Square

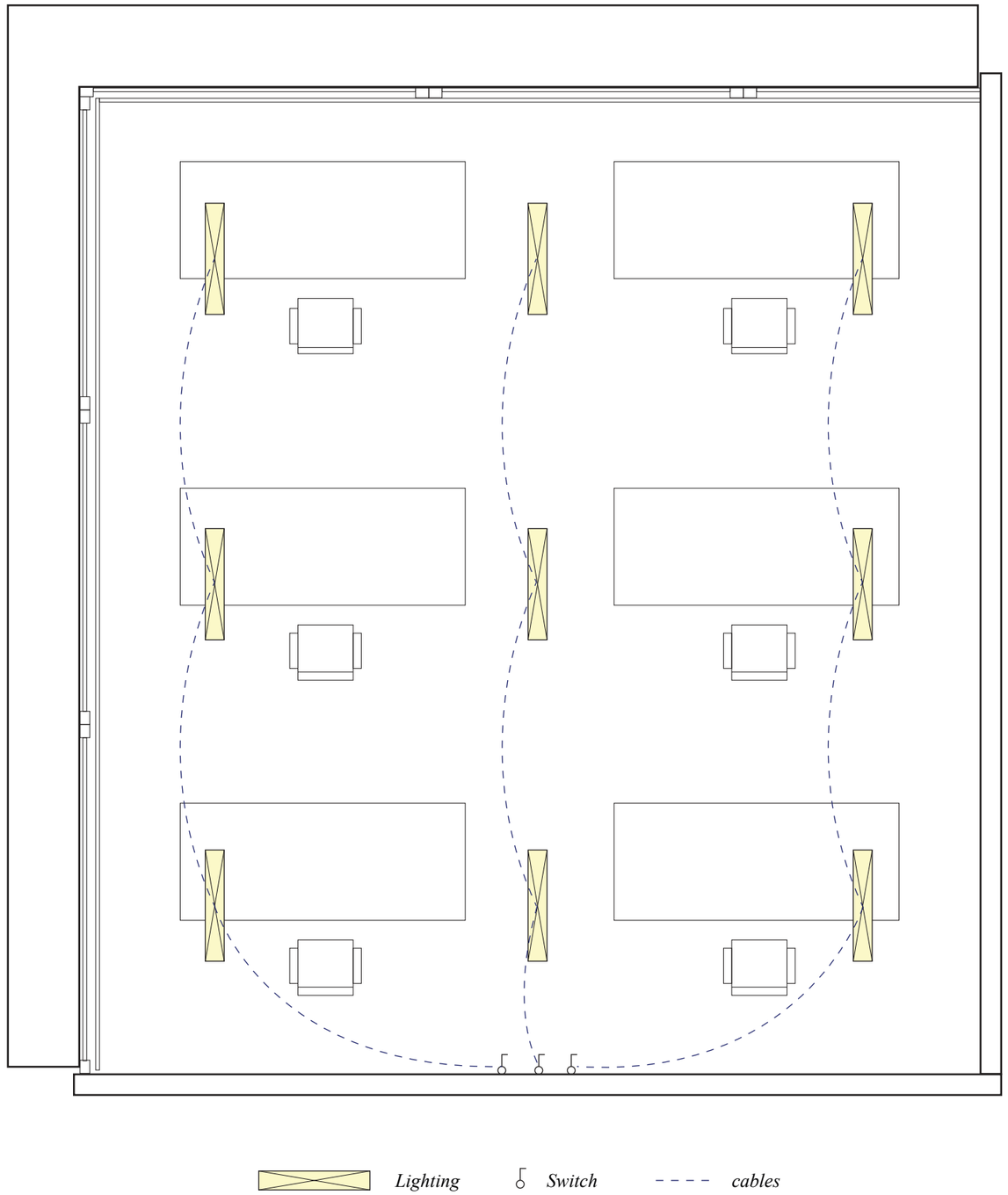
Comparision of lighting fixtures

Option Lighting Type	*Lighting type*	*Lighting distribution type*	*Function in office*	*Advantage*	*Disadvantaage*
 *BLT 2x2 LED Troffer*	*Recessed troffer (2x2) LED*	*Direct / Diffused*	*General ambient lighting for open-plan workspaces*	*Uniform light distribution, low glare, energy efficient, easy to install*	*May require more fixtures to cover larger areas*
 *VT 2x4 LED Troffer*	*Recessed troffer (2x4) LED*	*Direct / Diffused*	*Ambient lighting for larger office zones*	*Fewer fixtures needed due to higher lumen output, suitable for big layouts*	*Bulkier appearance, requires larger ceiling panels*
 *LED Downlight*	*Recessed circular LED downlight*	*Directional / Focused*	*Accent lighting, circulation zones, breakout areas*	*Sleek look, low glare, flexible placement, good for layering light*	*Narrower coverage, not ideal for primary task lighting alone*

4 Pancras Square

Light plan with cables and switches

Holophane HVTS 1X4 6000LM 80CRI 30K COL MVOLTCD

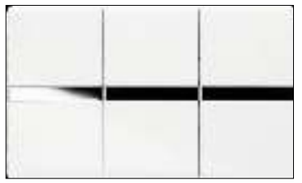


Lighting

Holophane
HVTS 1X4 6000LM 80CRI 30K COL
MVOLTCD

This is the lighting fixture for the office space because it provides energy efficiency, and uniform light distribution for the workspace. With an average illuminance of 505 lux, it falls perfectly within the recommended range (300–500 lux) for office work, ensuring that tasks such as reading, writing, and computer use are well supported without causing visual fatigue. The compact 2x2 format also integrates seamlessly with the modular ceiling grid, making it a practical and aesthetically consistent choice for the space.

Switch



C6 FRAMELESS WHITE
SWITCH 3 GANG 1 WAY

The C6 Frameless White Switch was chosen for its sleek, minimalist design and functional clarity while keeping a professional aesthetic. The frameless finish blends seamlessly into modern office interiors, contributing to a clean aesthetic. The 3-gang configuration allows for independent control of up to three lighting zones—perfect for managing different areas of the office, such as workstations, circulation paths, or meeting corners. Being a 1-way switch, it offers straightforward control from a single location, which suits the layout of a office like 4 pancras square. This switch enhances both user experience and spatial efficiency.

Cable placement

The lighting cable layout is designed with a horizontal connection strategy, running parallel to the rows of desks within the office space. This approach divides the room into multiple independently controlled lighting zones, each aligned with a specific row of workstations. The key advantage of this configuration is its flexibility—when a particular row of desks is not in use, the lights above that area can be manually switched off, significantly reducing unnecessary energy consumption during off-peak hours or partial occupancy.