

DAYLIGHTING AND ELECTRIC LIGHTING

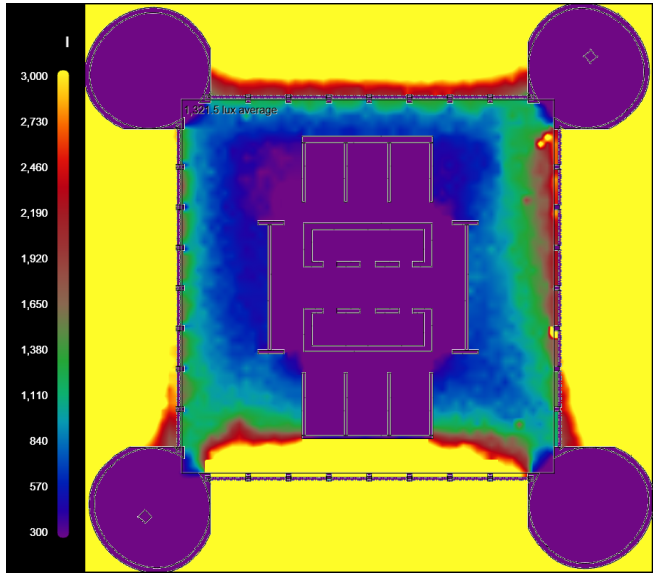
KNIGHTS OF COLUMBUS HEADQUARTERS

**Architect: Kevin Roche John
Dinkeloo & Associates**

**Environmental Technology and
Integrative Building System De-
sign II**

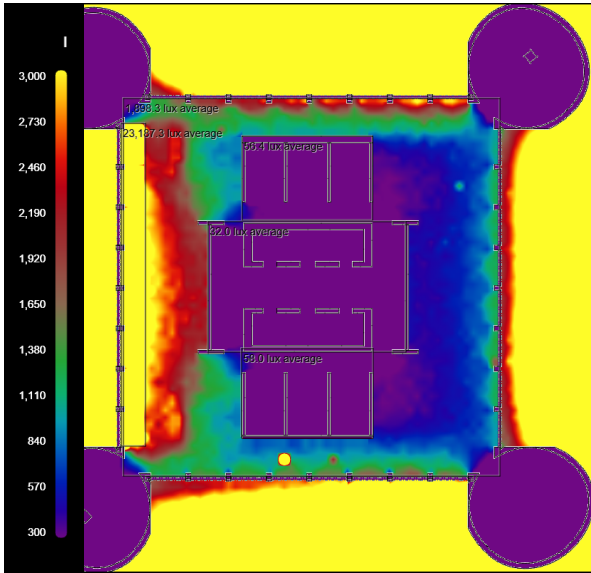


9AM DAYLIGHT ACCESS MARCH 21
Without Facade



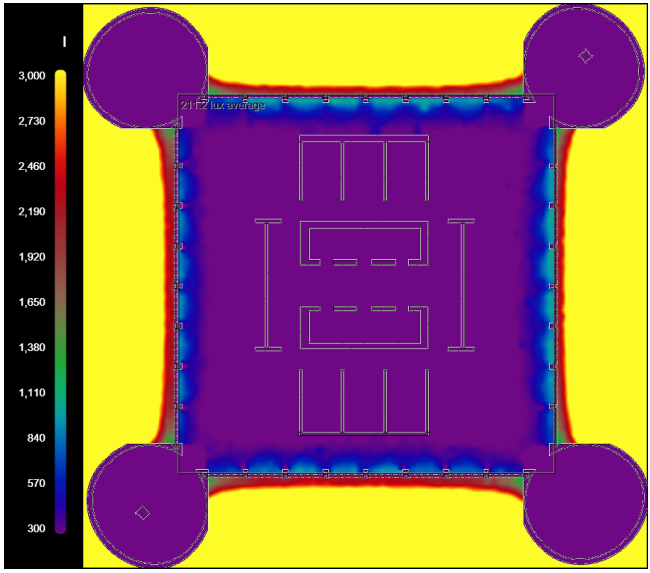
Window Transmittance (81%) Glass Facade
Total Office Area: 330 Square Meters
Shadowed Areas (Purple): 169.21 Square Meters
Overexposed Areas (Yellow): 15.03 Square Meters
Daylight Area (Rest): 145.76 Square Meters
Daylight Percentage: 44.17%

3AM DAYLIGHT ACCESS MARCH 21
Without Facade



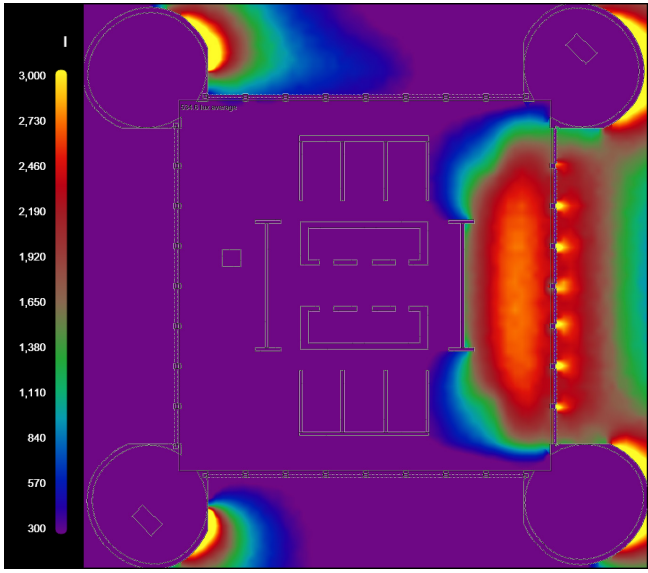
Window Transmittance (81%) Glass Facade
Total Office Area: 330 Square Meters
Shadowed Areas (Purple): 179.51 Square Meters
Overexposed Areas (Yellow): 13.30 Square Meters
Daylight Area (Rest): 137.19 Square Meters
Daylight Percentage: 41.57%

9AM DAYLIGHT ACCESS MARCH 21
With Facade



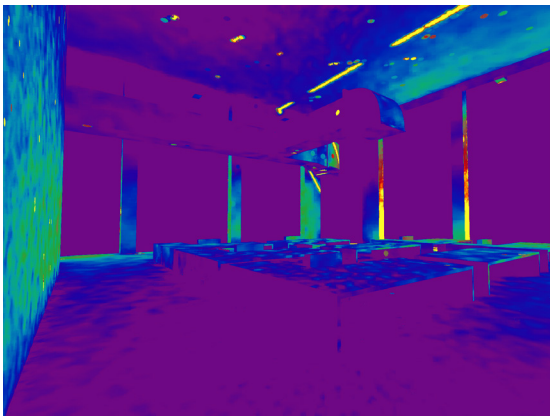
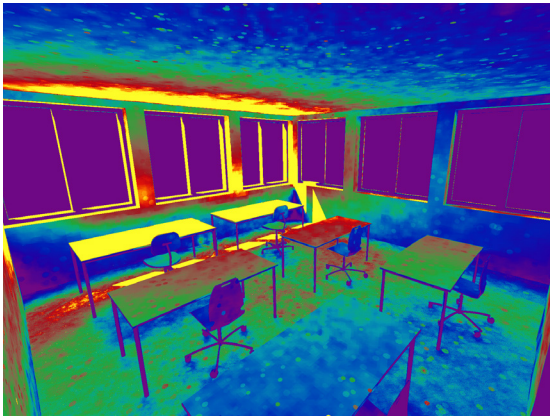
Window Transmittance (81%) Glass Fa-
cade
Total Office Area: 330 Square Meters
Shadowed Areas (Purple): 280 Square Meters
Overexposed Areas (Yellow): 0 Square Meters
Daylight Area (Rest): 50 Square Meters
Daylight Percentage: 15.15%

3AM DAYLIGHT ACCESS MARCH 21
With Facade

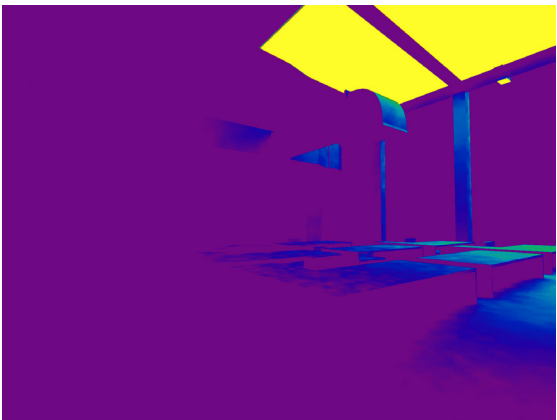
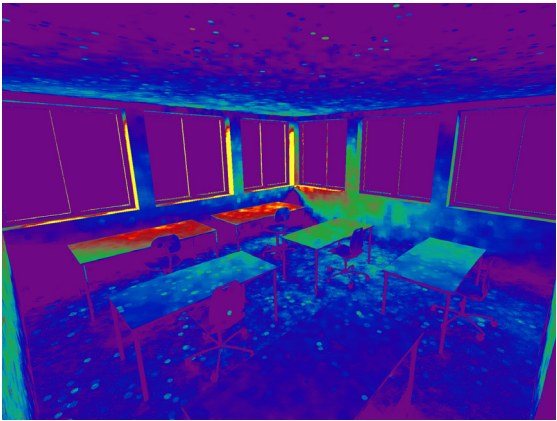


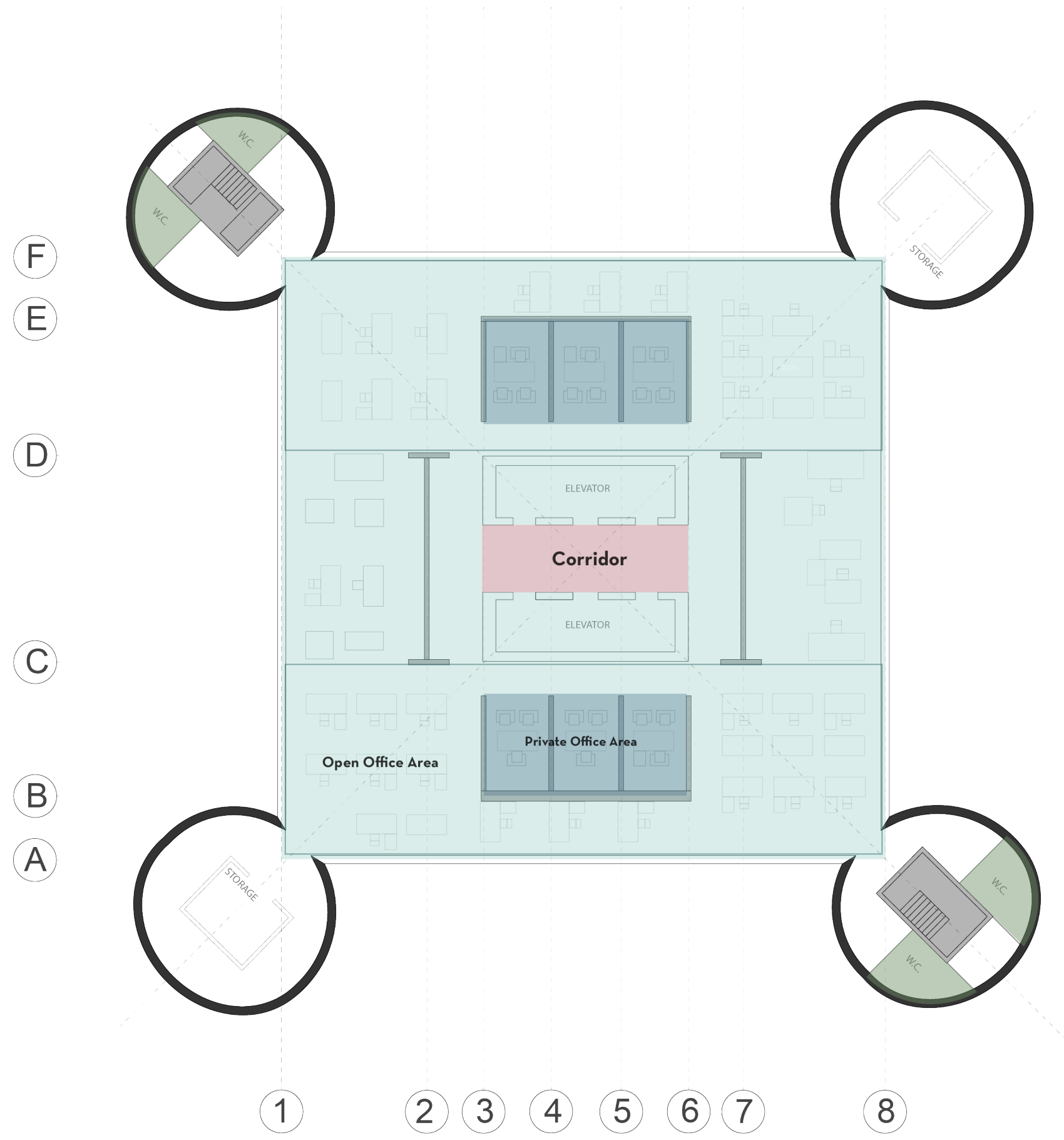
Window Transmittance (81%) Glass Fa-
cade
Total Office Area: 330 Square Meters
Shadowed Areas (Purple): 280 Square Meters
Overexposed Areas (Yellow): 8.5 Square Meters
Daylight Area (Rest): 58.5 Square Meters
Daylight Percentage: 17.73%

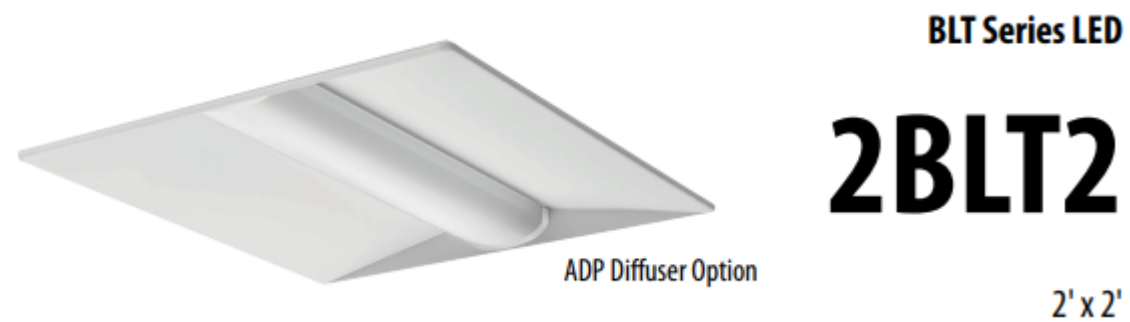
DAYLIGHT ACCESS MARCH 21
Without Facade (OFFICE PERSPECTIVE)



DAYLIGHT ACCESS MARCH 21
With Facade (OFFICE PERSPECTIVE)



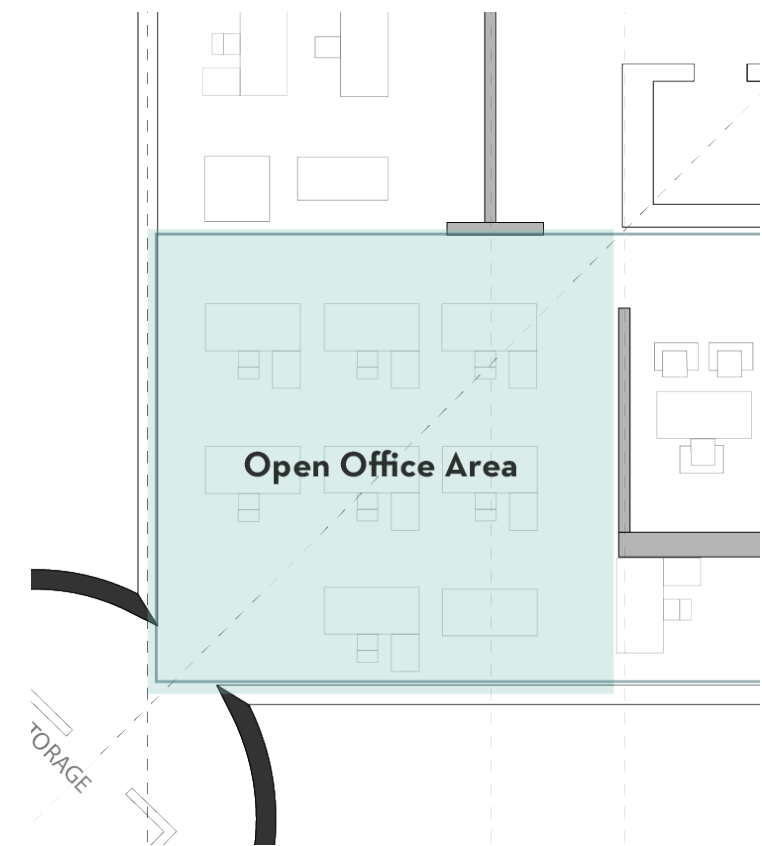




Lighting Design Concept

This office lighting design employs recessed 2×2 troffers—specifically the Lithonia 2BLT2 20L LP835—strategically arranged in a linear grid to ensure even, glare-free illumination across the workspace. The fixtures offer a neutral 3500K color temperature, supporting both comfort and productivity. Installed in a 2×2 ceiling grid, the lighting remains discreet and architecturally integrated, emphasizing a clean, professional aesthetic. The layout ensures balanced distribution of light, minimizing harsh shadows or overlit zones, and achieves optimal brightness for desk tasks while maintaining energy efficiency. This concept highlights visual comfort, spatial uniformity, and a calm working atmosphere in compact office settings.





For a 5.5×5.5 m office with a 3.5 m ceiling, four Acuity Brands 2BLT2 33L LUGRT LP840 troffers (2x2 layout) provide balanced lighting. Each fixture delivers 3,300 lumens at ~33W, achieving ~437 lux average illuminance and a power density of ~4.7 W/m². Fixtures are spaced 2.75 m apart with a light loss factor of 0.80. The 4000K color temperature supports productivity, while recessed installation ensures a clean, professional ceiling finish. This layout meets recommended lighting standards for office tasks with energy efficiency and visual comfort.

Settings

Units Meters - Lux

Room Dimensions

Length [X] 5.23 m

Width [Y] 5.29 m

Height [Z] 3.5 m

Workplane 2.5 m

Ceiling Type 2x2

Room Reflectances

Ceiling 80 %

Walls 50 %

Floor 20 %

Criteria

Illuminance lux

Power Density 2.5 W/m²

Quantity

Constraints

Spacing X [SC=1.5] 2.75 m

Spacing Y [SC=1.2] 2.75 m

Rows 2

Columns 2

Calculation Results [A]

Illuminance 461 lux

Power Density 4.6 W/m²

Quantity 4

Spacing Results [A]

Spacing 2.75 x 2.75 m

Arrangement 2 x 2

Outside Spacing X 0.94 m

Outside Spacing Y 0.97 m

Display

Dimensions Room ☒ Layout ☐

Show Zonal Cavity Info [+]

Project Information

A

Lithonia Lighting

[A] - 2BLT2 33L LUGRT 347 LP840

Light Loss Factor 1

Suspension Length 0

Orientation 0

Symbol Shape Rectangular

Symbol Length .6

Symbol Width .6

Lamp Quantity 1

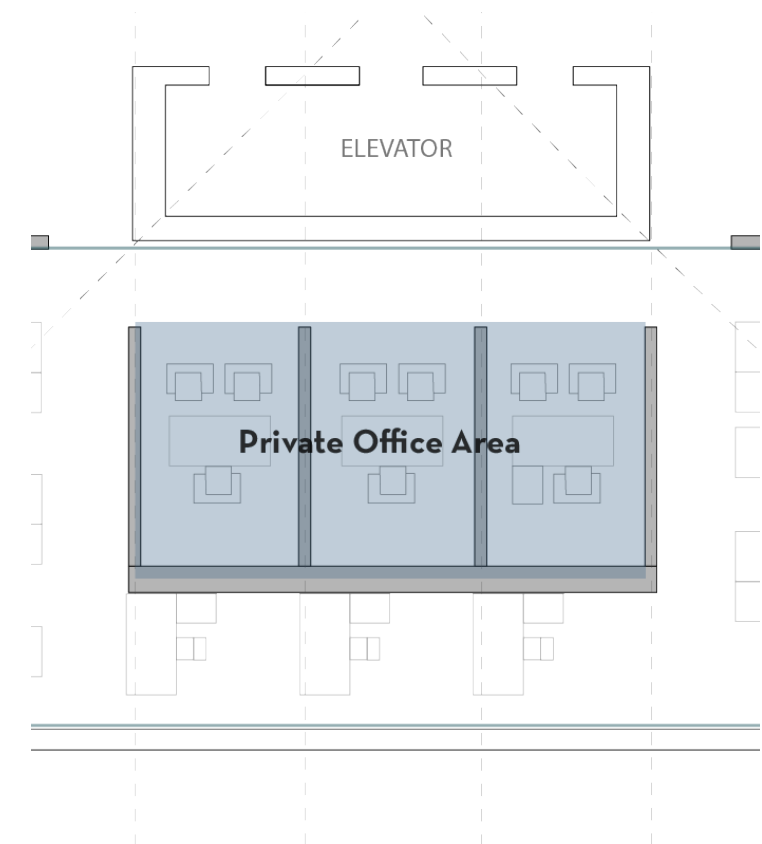
Lumens Per Lamp 3528

Wattage 31.8

2BLT2 33L LUGRT 347 LP840

PAWIN CHAIYAPATRANUN

XIAOXING SONG



For a 2.8 × 4.75 m office with a 3.5 m ceiling, three Lithonia 2BLT2 20L LP835 troffers (2×2 ft) were used in a 1×3 layout. Each fixture provides 2,174 lumens at 18.2 W, resulting in an average illuminance of 375 lux and a power density of 4.11 W/m². Fixtures are spaced 1.5 m apart, with a light loss factor of 0.8 assumed. The 3500K color temperature offers a warm, comfortable environment ideal for small office work. This setup ensures efficient, evenly distributed lighting while staying within recommended energy usage guidelines. Ceiling type: 2×2 grid with recessed installation.

Settings

Units Meters - Lux

Room Dimensions

Length [X] 2.8 m

Width [Y] 4.75 m

Height [Z] 3.5 m

Workplane 2.5 m

Ceiling Type 2x2

Room Reflectances

Ceiling 80 %

Walls 50 %

Floor 20 %

Criteria

Illuminance lux

Power Density 2.5 W/m²

Quantity

Constraints

Spacing X [SC=1.3] 1.5 m

Spacing Y [SC=1.2] 1.5 m

Rows 3

Columns 1

Calculation Results [A]

Illuminance 375 lux

Power Density 4.11 W/m²

Quantity 3

Spacing Results [A]

Spacing 1.5 x 1.5 m

Arrangement 1 x 3

Outside Spacing X 1.2 m

Outside Spacing Y 0.68 m

Display

Dimensions ☐ Room ☒ Layout ☐

Show Zonal Cavity Info [+]

Project Information

A

2BLT2 33L ADP LP840

Lithonia Lighting

[A] - 2BLT2 2UV222 20L ADSMT LP835

Light Loss Factor 1

Suspension Length 0

Orientation 0

Symbol Shape Rectangular

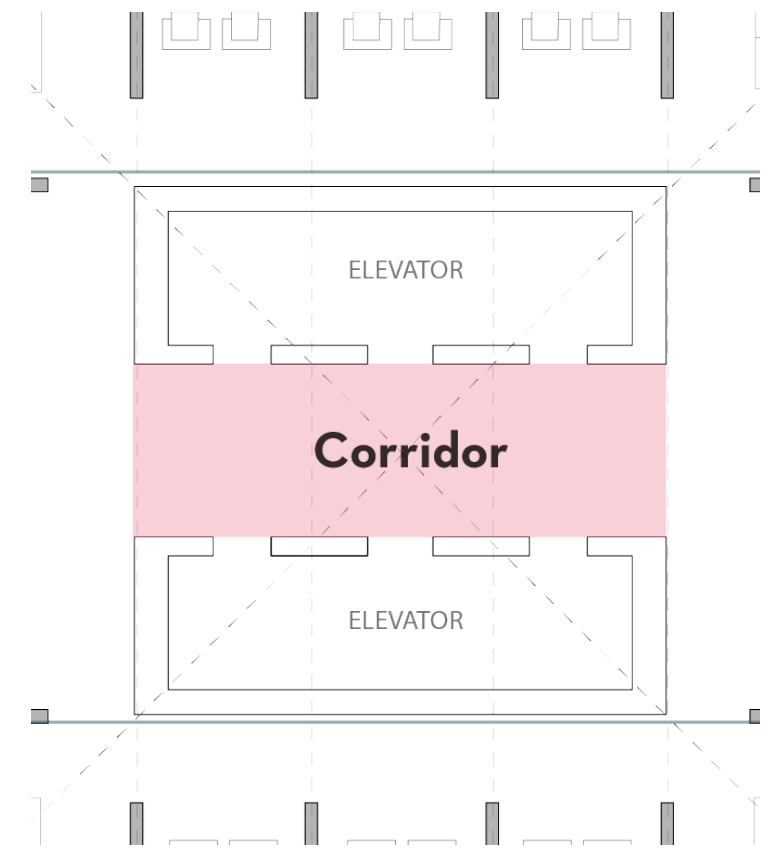
Symbol Length .4

Symbol Width .4

Lamp Quantity 1

Lumens Per Lamp 2174

Wattage 18.2



For a 2 × 5.5 m corridor with a 3.5 m ceiling, use two Acuity Brands **2BLT2 33L ADP LP840** LED troffers (2×2 ft) in a linear layout. Each fixture delivers **3,300 lumens at ~30W**, providing an average **illuminance of ~400 lux** and a **power density of ~5.5 W/m²**. Fixtures are spaced **2.75 m apart**, centered along the corridor length. The **4000K color temperature** supports visibility and safety, while recessed mounting maintains a minimal, clean ceiling profile. This layout ensures uniform, efficient corridor lighting that meets circulation area standards.

Settings

Units Meters - Lux

Room Dimensions

Length [X] 2 m

Width [Y] 4.75 m

Height [Z] 3.5 m

Workplane 2.5 m

Ceiling Type 2x2

Room Reflectances

Ceiling 80 %

Walls 50 %

Floor 20 %

Criteria

Illuminance lux

Power Density 2.5 W/m²

Quantity

Constraints

Spacing X [SC=1.3] 2.375 m

Spacing Y [SC=1.2] 2.375 m

Rows 2

Columns 1

3.5

4.75

2

Calculation Results [A]

Illuminance 500 lux

Power Density 5.58 W/m²

Quantity 2

Spacing Results [A]

Spacing 2.375 x 2.375 m

Arrangement 1 x 2

Outside Spacing X 0.7 m

Outside Spacing Y 0.89 m

Display

Dimensions Room ☒ Layout ☐

Show Zonal Cavity Info [+]

A

2BLT2 33L ADP LP840

Lithonia Lighting

[A] - 2BLT2 33L ADP LP840

Light Loss Factor 1

Suspension Length 0

Orientation 0

Symbol Shape Rectangular

Symbol Length .6

Symbol Width .6

Lamp Quantity 1

Lumens Per Lamp 3391

Wattage 26.5

- 0° H

- 90° H

- Max Cd: 67.5° H

