AUT 274
LUZ, ARQUITETURA E URBANISMO

LUZ e FUNÇÃO

PARA A REALIZAÇÃO DA TAREFA – O CUMPRIMENTO DA FUNÇÃO

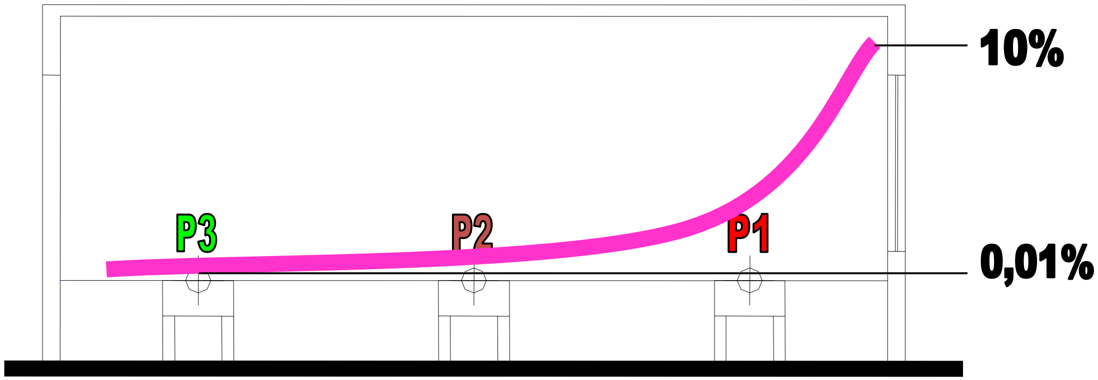
- Quantidade
- Distribuição
- Presença de contraste ou ofuscamento
- Qualidade do espectro luminoso (cor da luz)

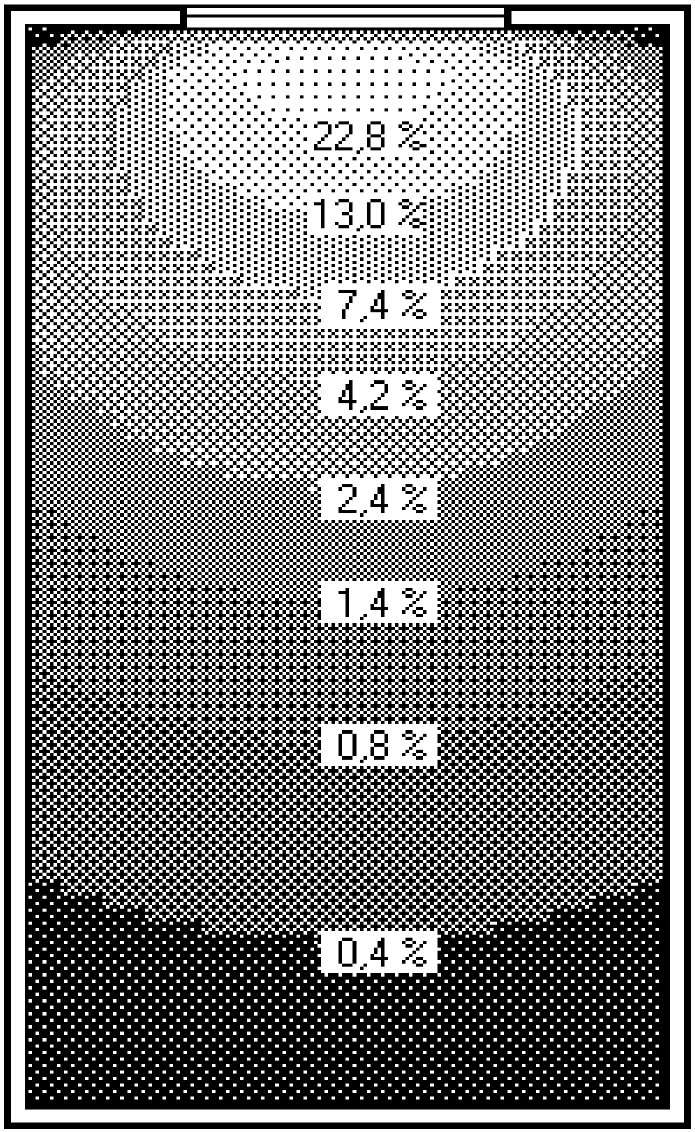
Parâmetros arquitetônicos correlatos

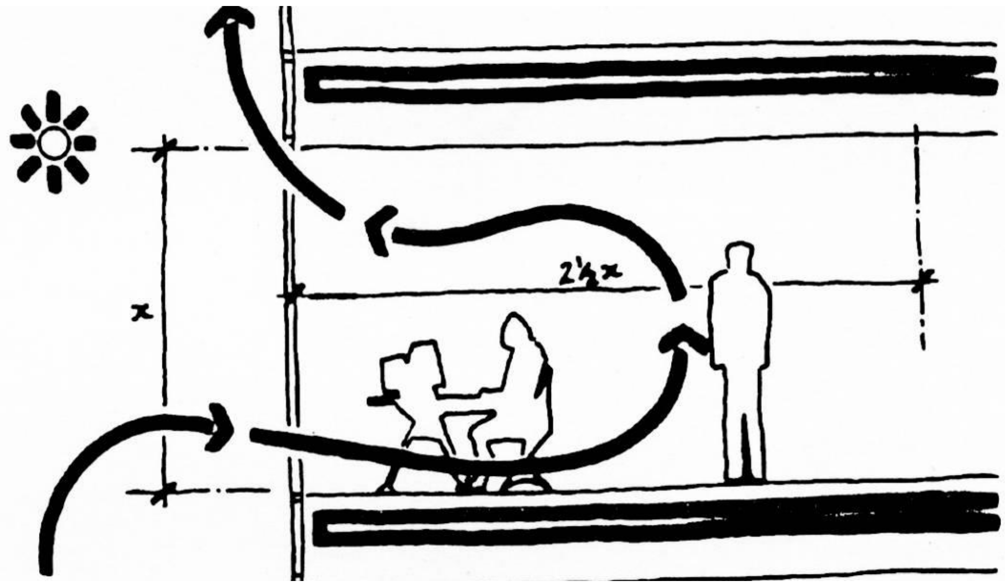
- Tipo de Céu e Orientação solar
- Proporções do espaço interno
- Forma, tamanho e posicionamento das aberturas
- Característica de transmissão luminosa da vedação das aberturas
- Forma do espaço interno
- Desenho e revestimento de refletores internos e externos
- Cores
- <u>Posicionamento dos usuários – layout do mobiliário</u>

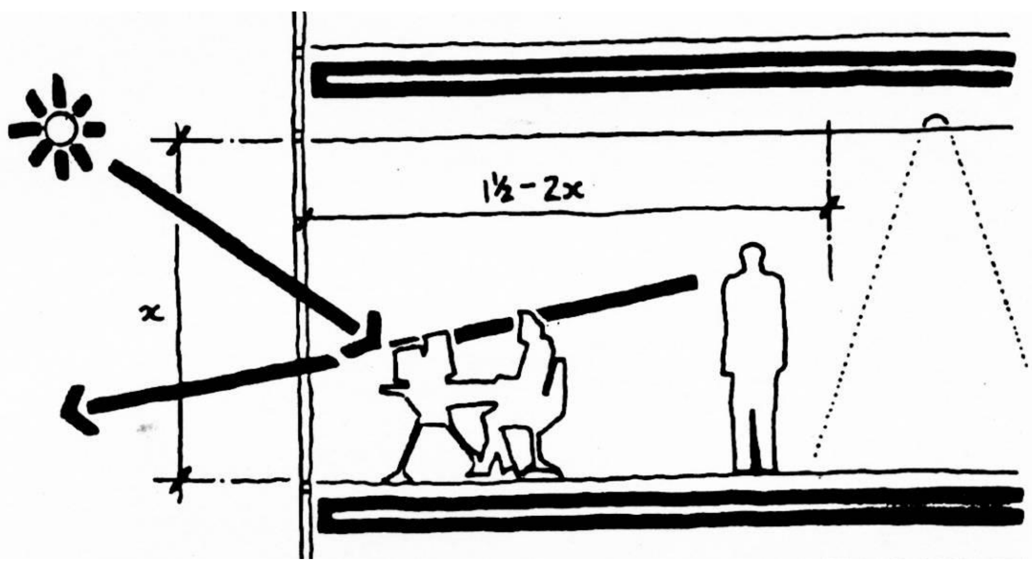
LUZ LATERAL

Fator de Luz Natural e o desempenho do sistema lateral de iluminacao natural






2½x
x

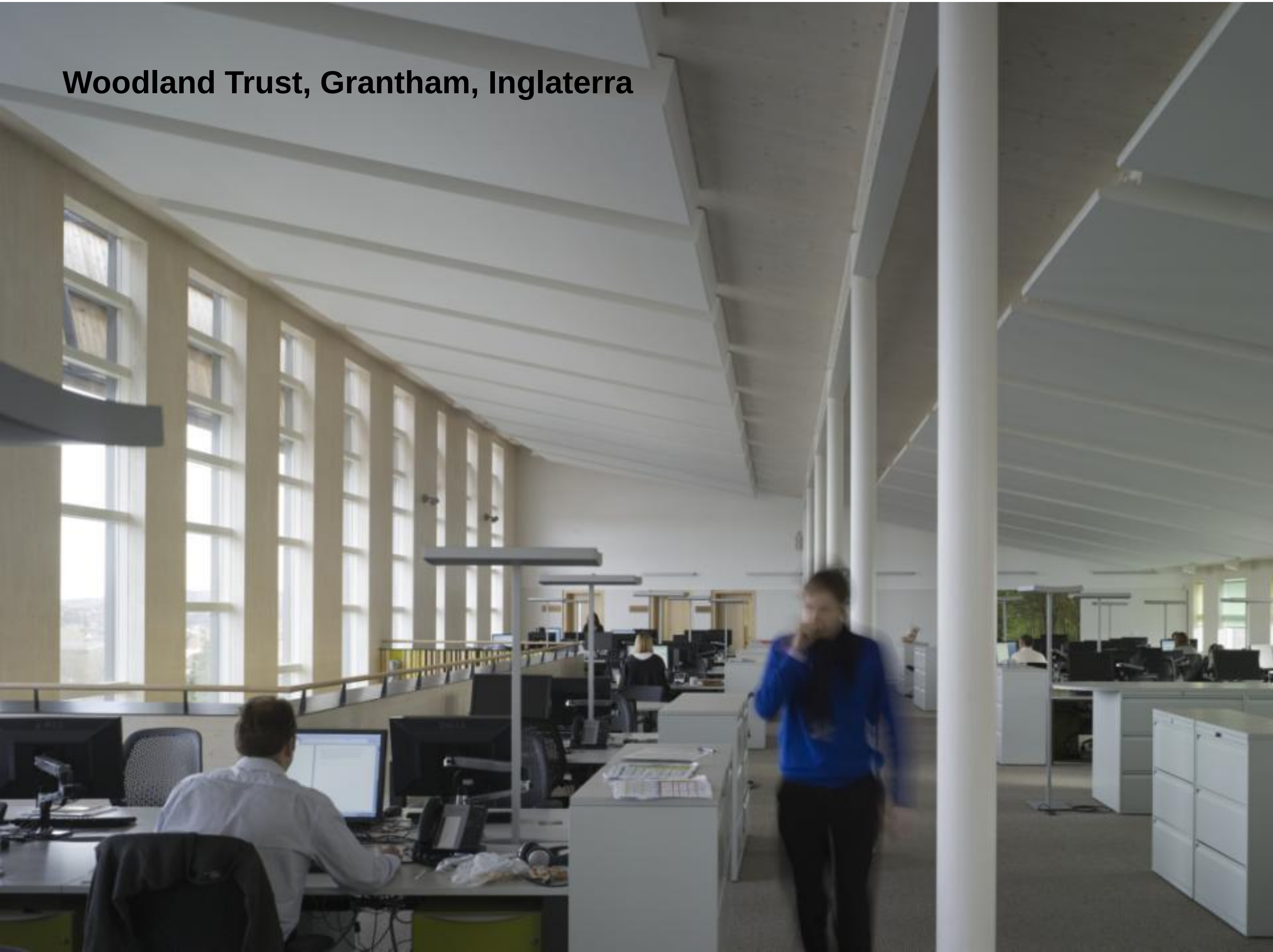

1½-2x
x

LATERAL

Índice de conforto de Fanger (1970):
ISO 7730 (2005); ASHRAE 55 (1992)

O ambiente de escritórios dos anos 90 e 2000

Woodland Trust, Grantham, Inglaterra

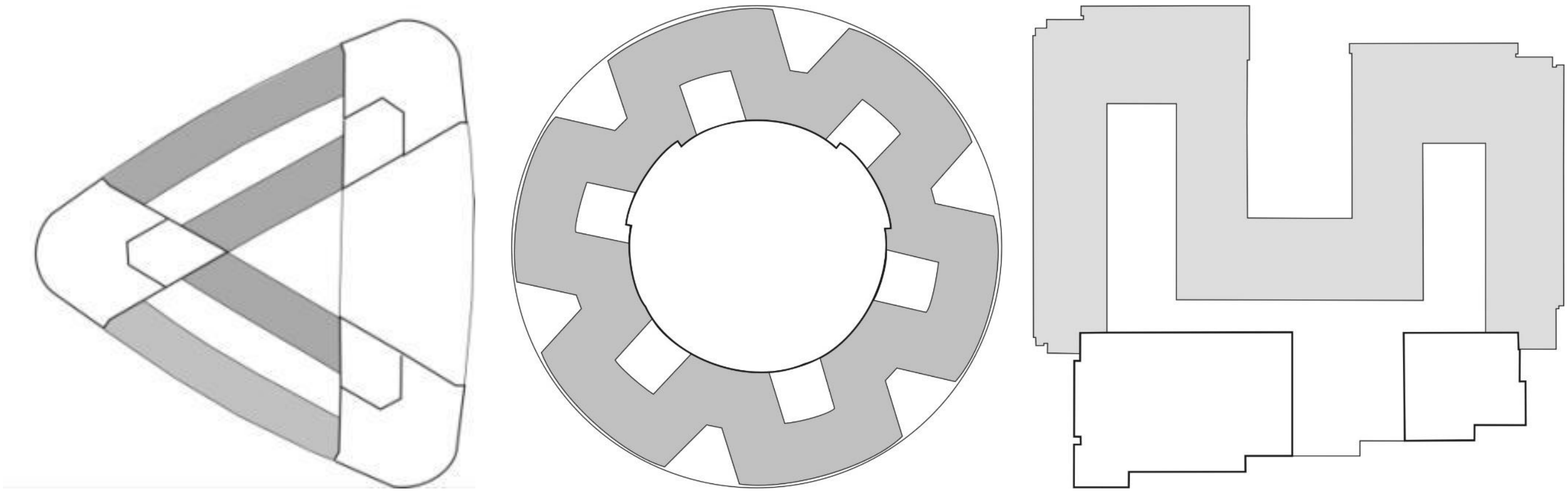


Premissa: um modelo para um bom desempenho térmico começa com um bom projeto de iluminação natural

HSBC, Hong Kong,1985

MULTIPLAS FORMAS

Grade 1 area in the typical floor plate of (a) Commerzbank Headquarters, (b) 30 Saint Mary Axe and (c) 110 Bishopsgate.



(a) (b) (c)

Commerzbank HQ, Frankfurt

Edifícios Energeticamente Eficientes ao invés de Fachadas "Inteligentes"

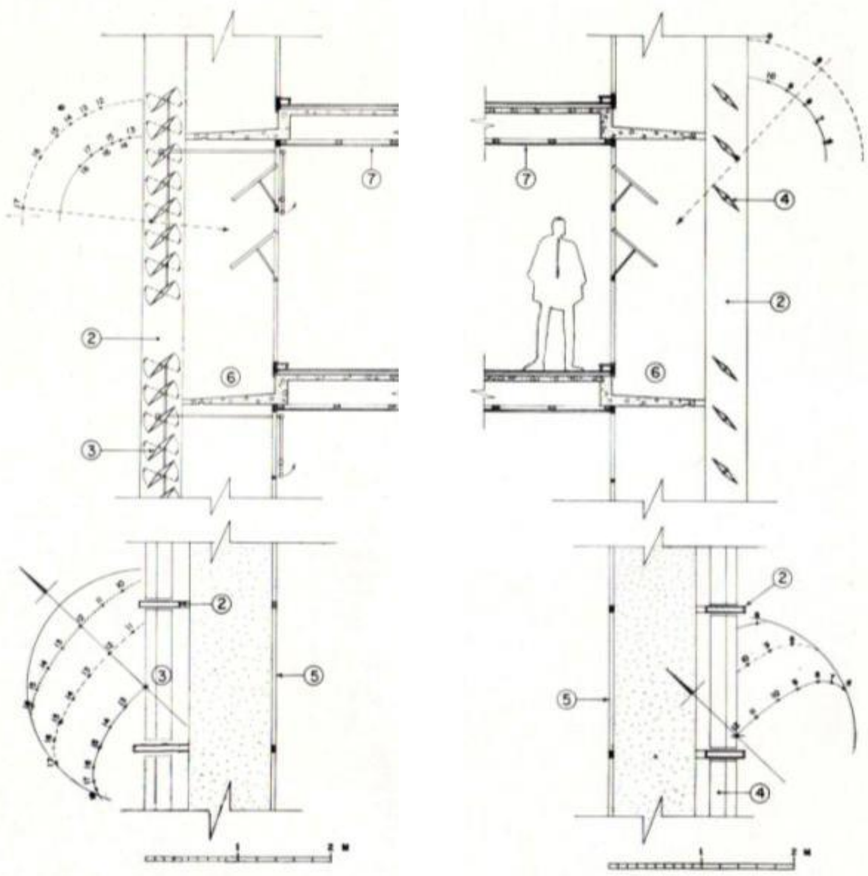
MEC, Rio de Janeiro

GSW, Berlin

30th Saint Mary Axe, London

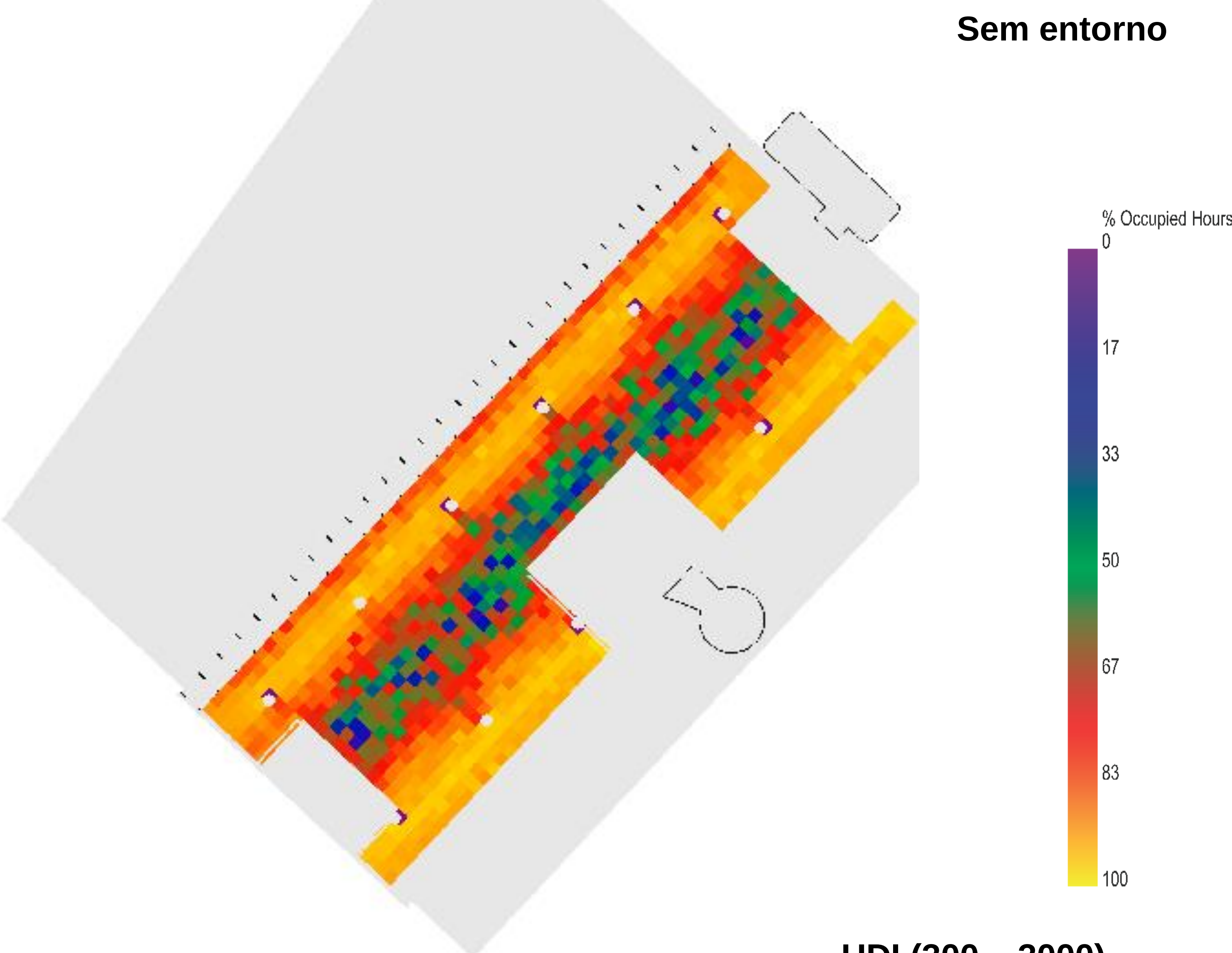
Edifício de escritórios em São Paulo – Estudos de Projeto
Vista interna da fachada norte, aonde pode ser visto o uso de prateleiras de luz.

Vista interna da fachada oeste, aonde pode se ver o uso de brises verticais como estratégia de proteção solar.

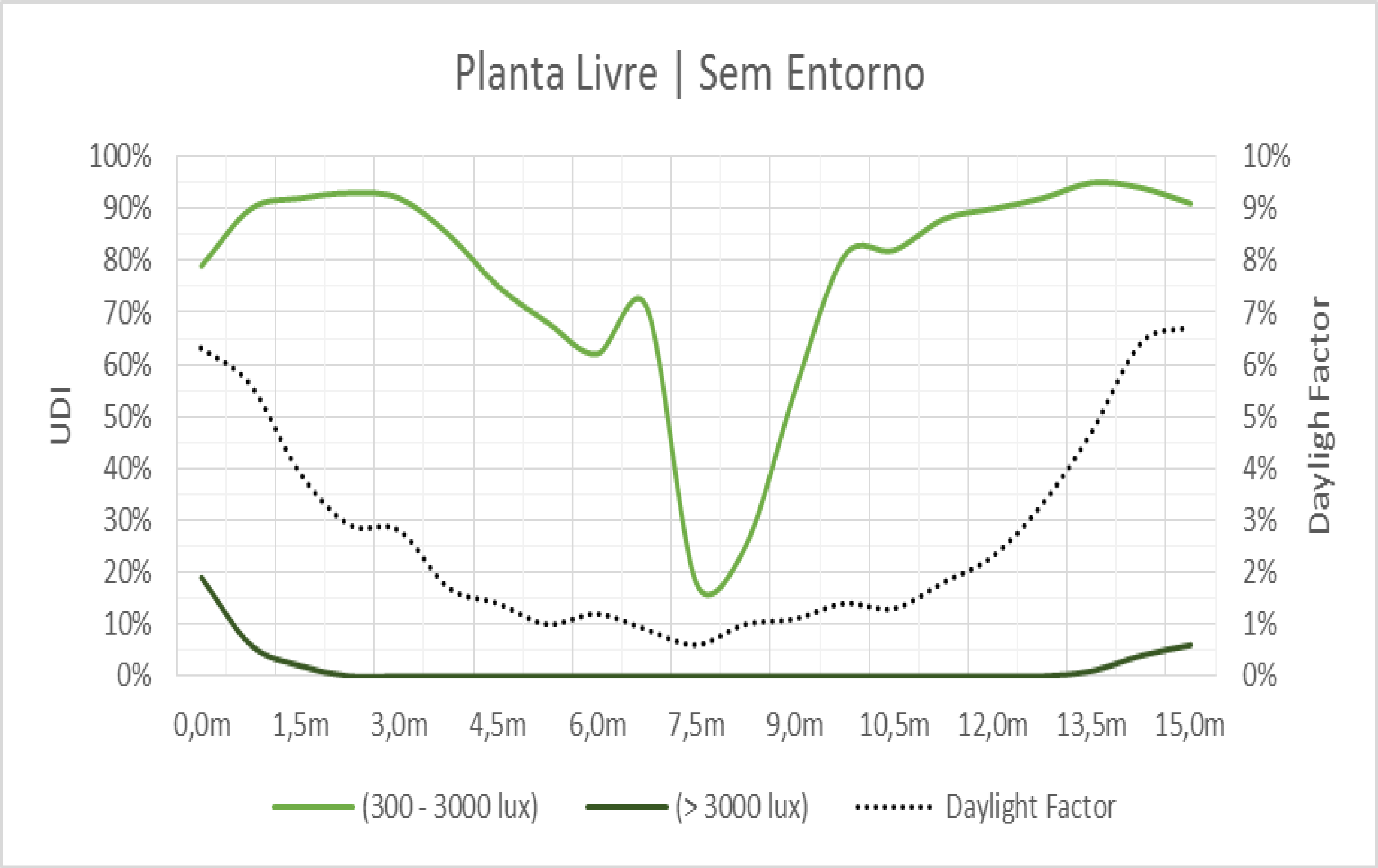


Banco Sul Americano
São Paulo, 1966

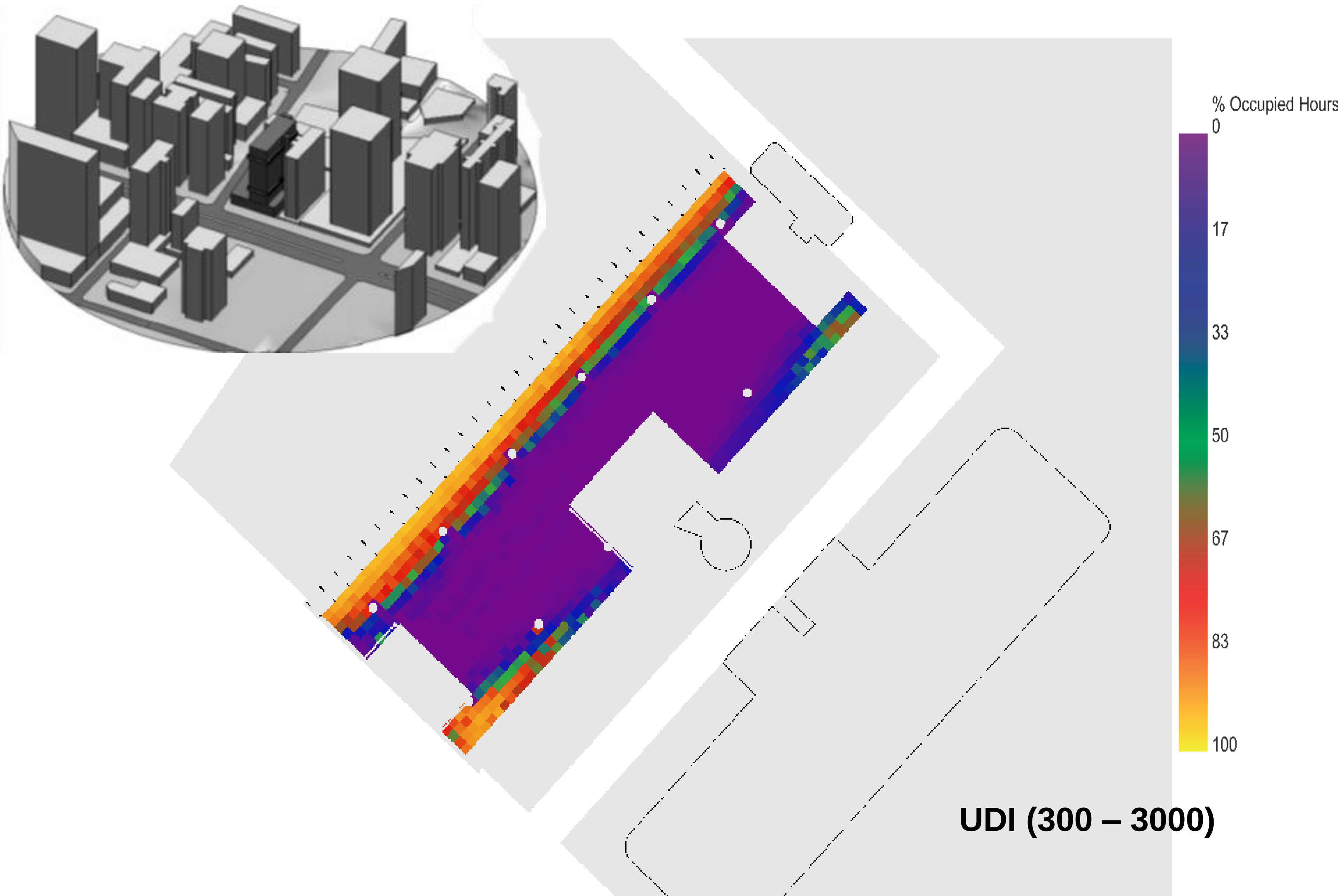
Sem entorno



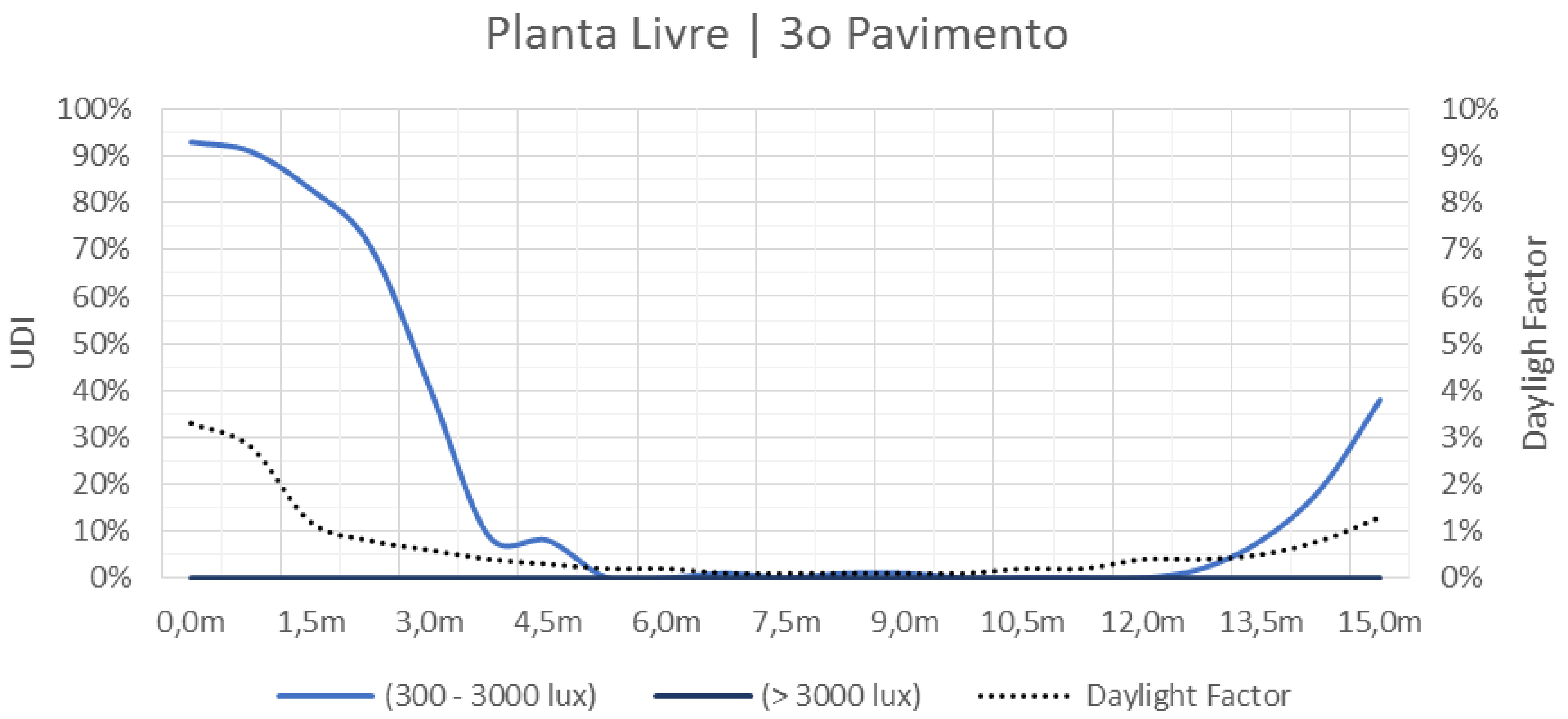
UDI (300 – 3000)


Planta Livre | Sem Entorno
UDI
Daylight Factor
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0,0m
1,5m
3,0m
4,5m
6,0m
7,5m
9,0m
10,5m
12,0m
13,5m
15,0m
(300 - 3000 lux)
(> 3000 lux)
Daylight Factor

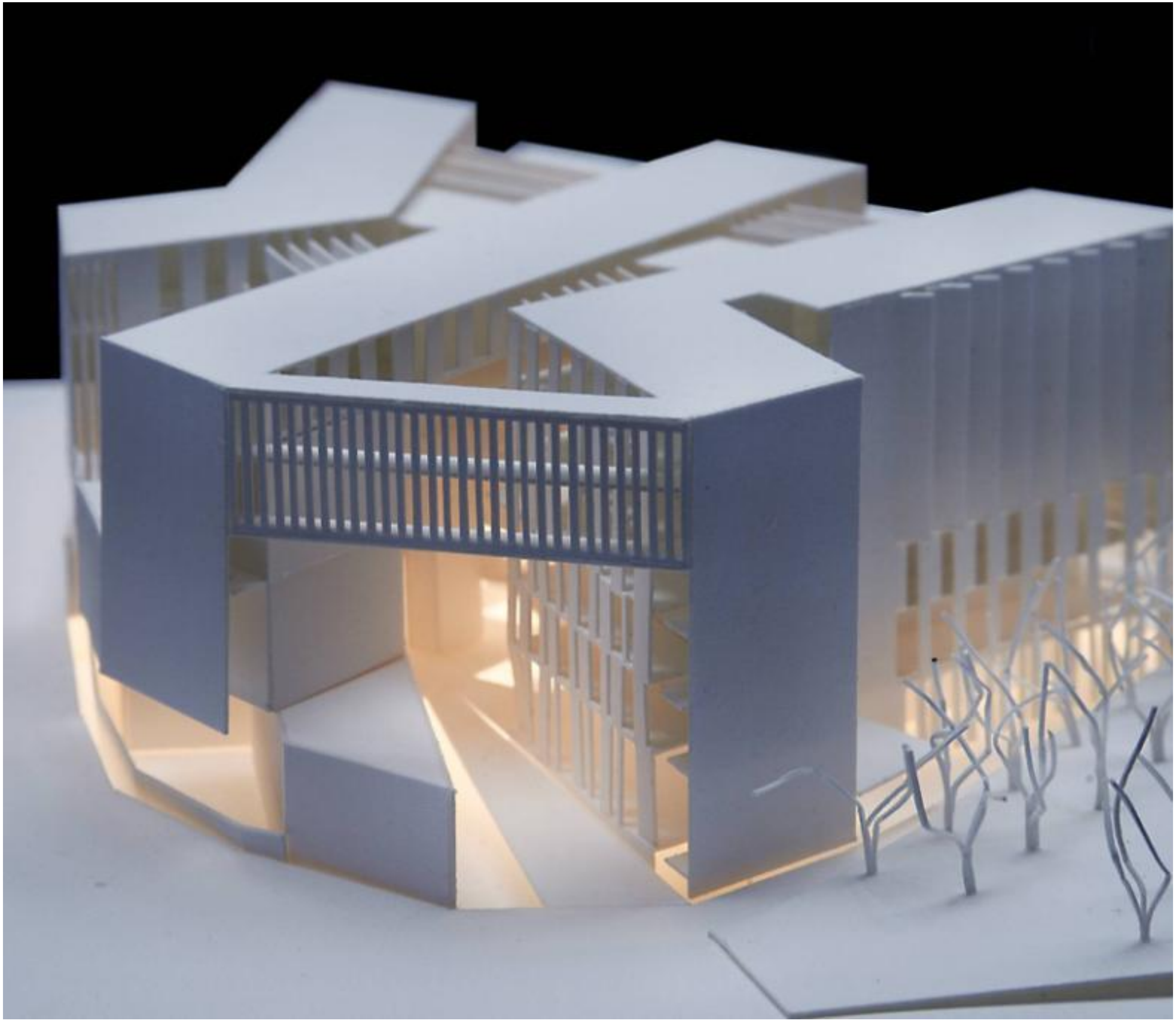
3º Pavimento

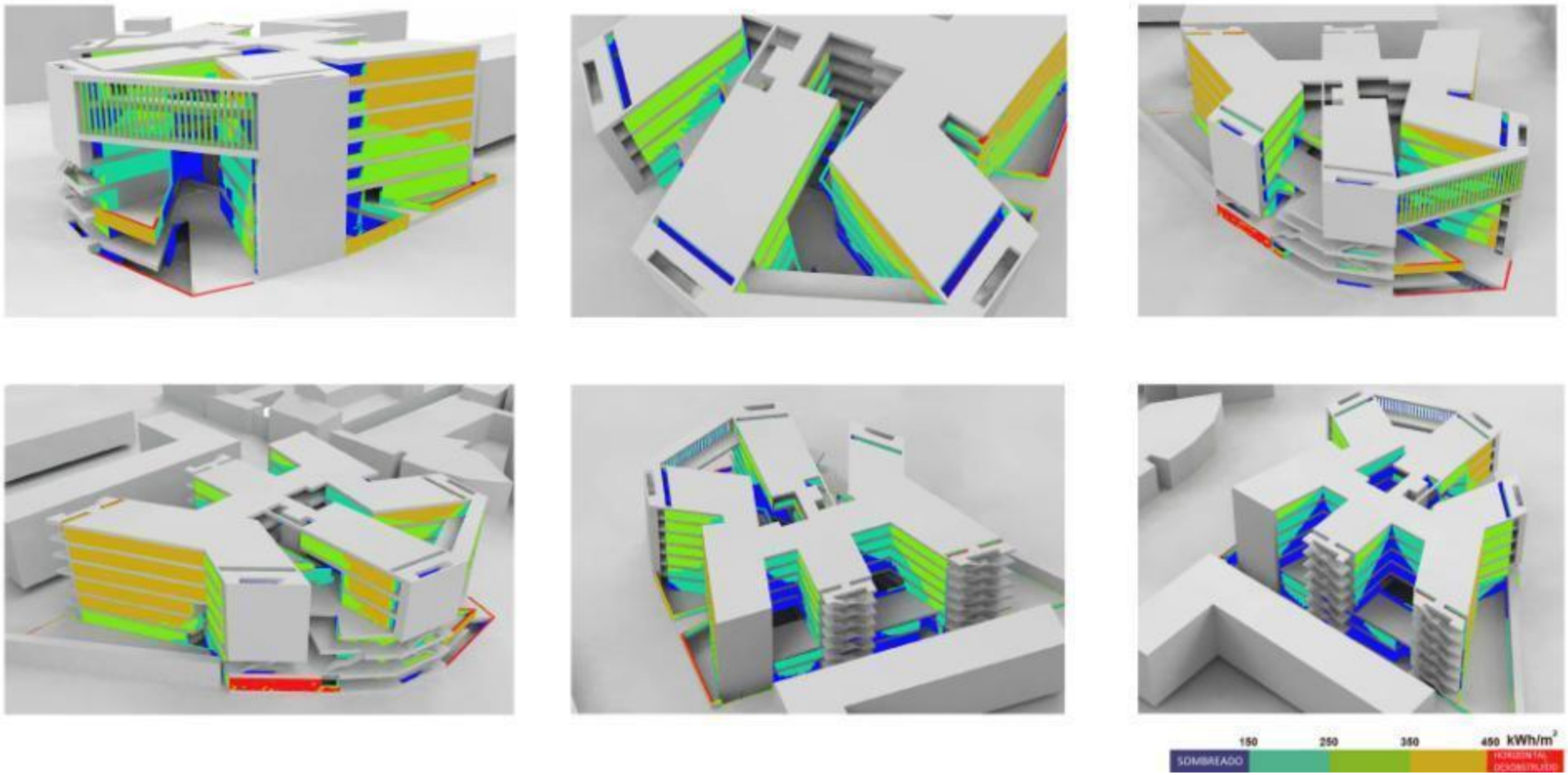


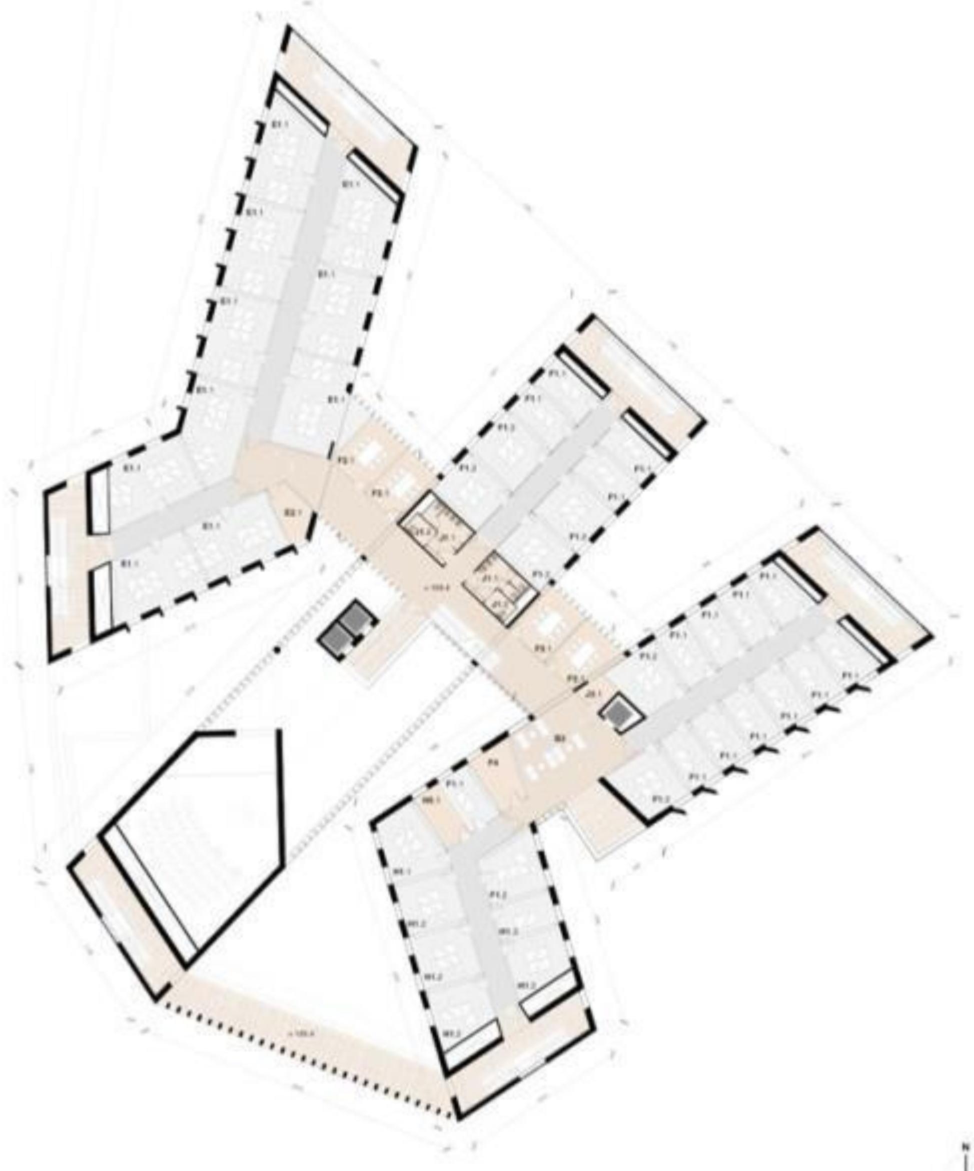
UDI (300 – 3000)

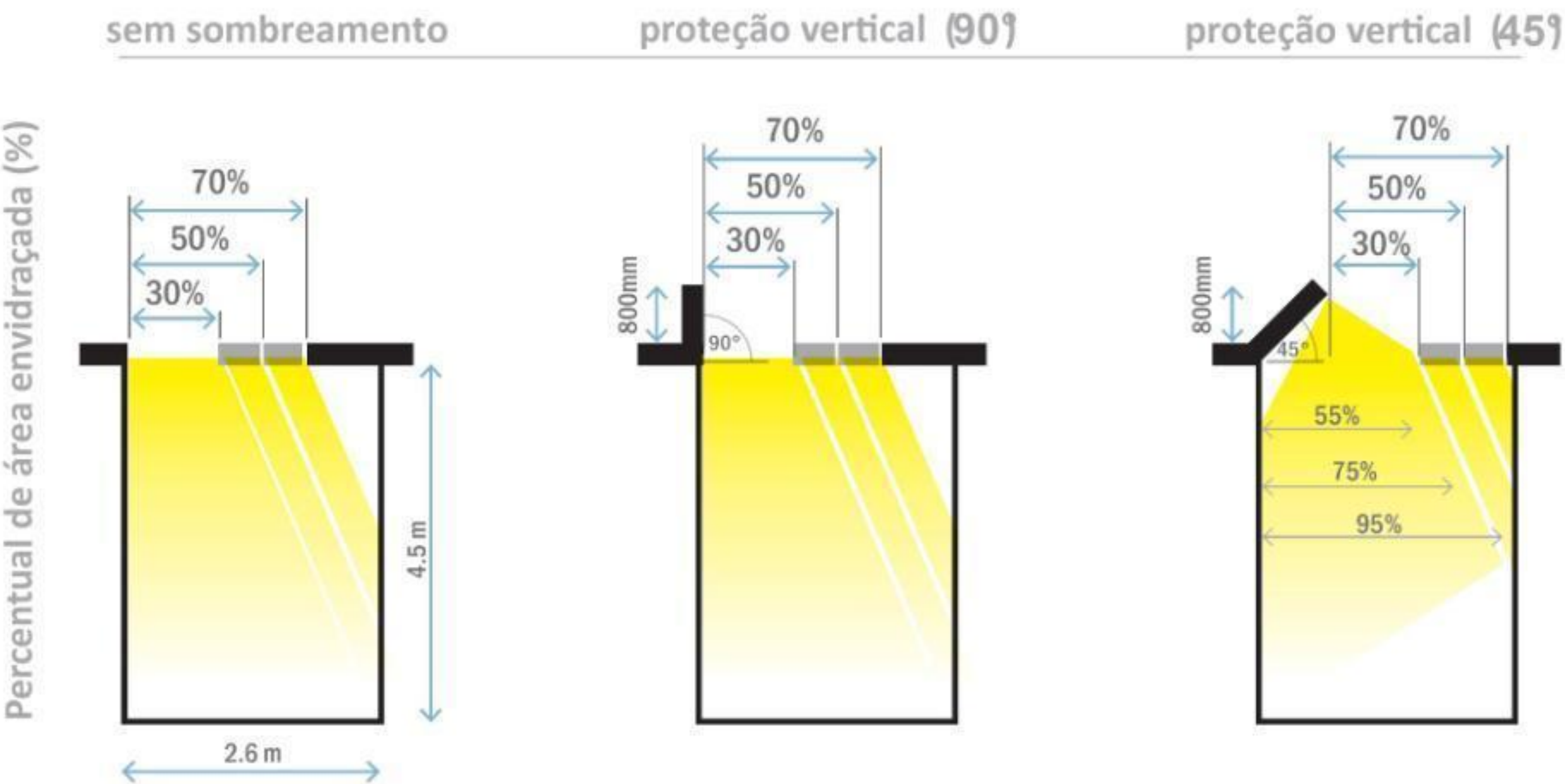

Planta Livre | 3o Pavimento
UDI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Daylight Factor
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0,0m
1,5m
3,0m
4,5m
6,0m
7,5m
9,0m
10,5m
12,0m
13,5m
15,0m
(300 - 3000 lux)
(> 3000 lux)
Daylight Factor

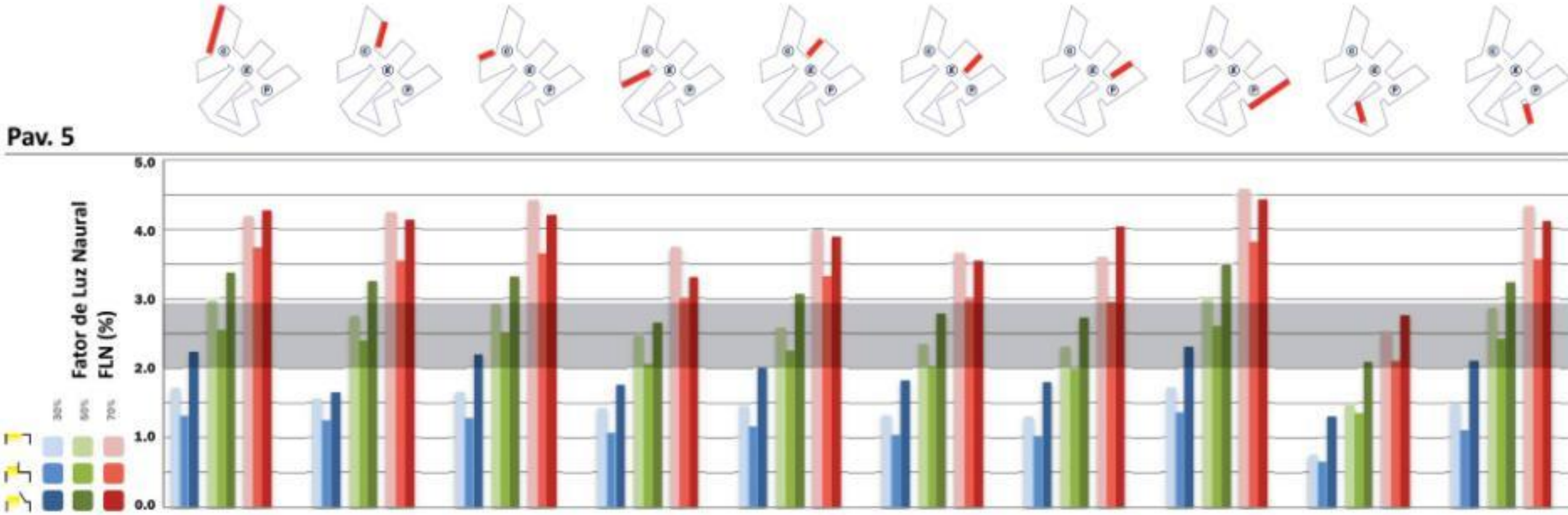

ESCOLA DE ECONOMIA DE TOULOUSE (TSE)



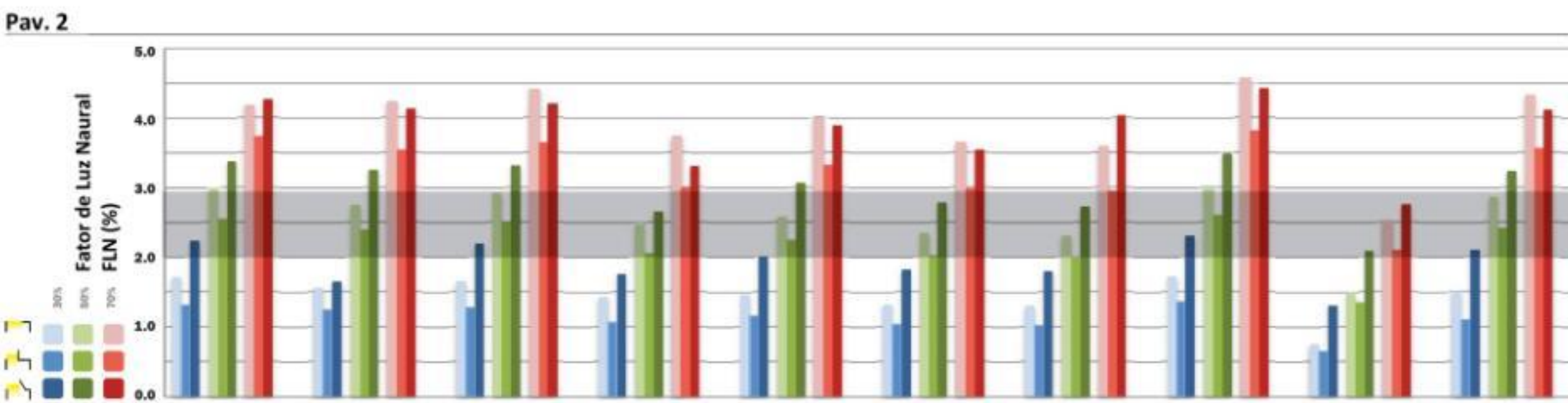

150
250
350
450
kWh/m2
SOMBREADO




sem sombreamento
proteção vertical (90°)
proteção vertical (45°)
Percentual de área envidraçada (%)
70%
50%
30%
4.5 m
2.6 m
800mm
90°
45°
55%
75%
95%



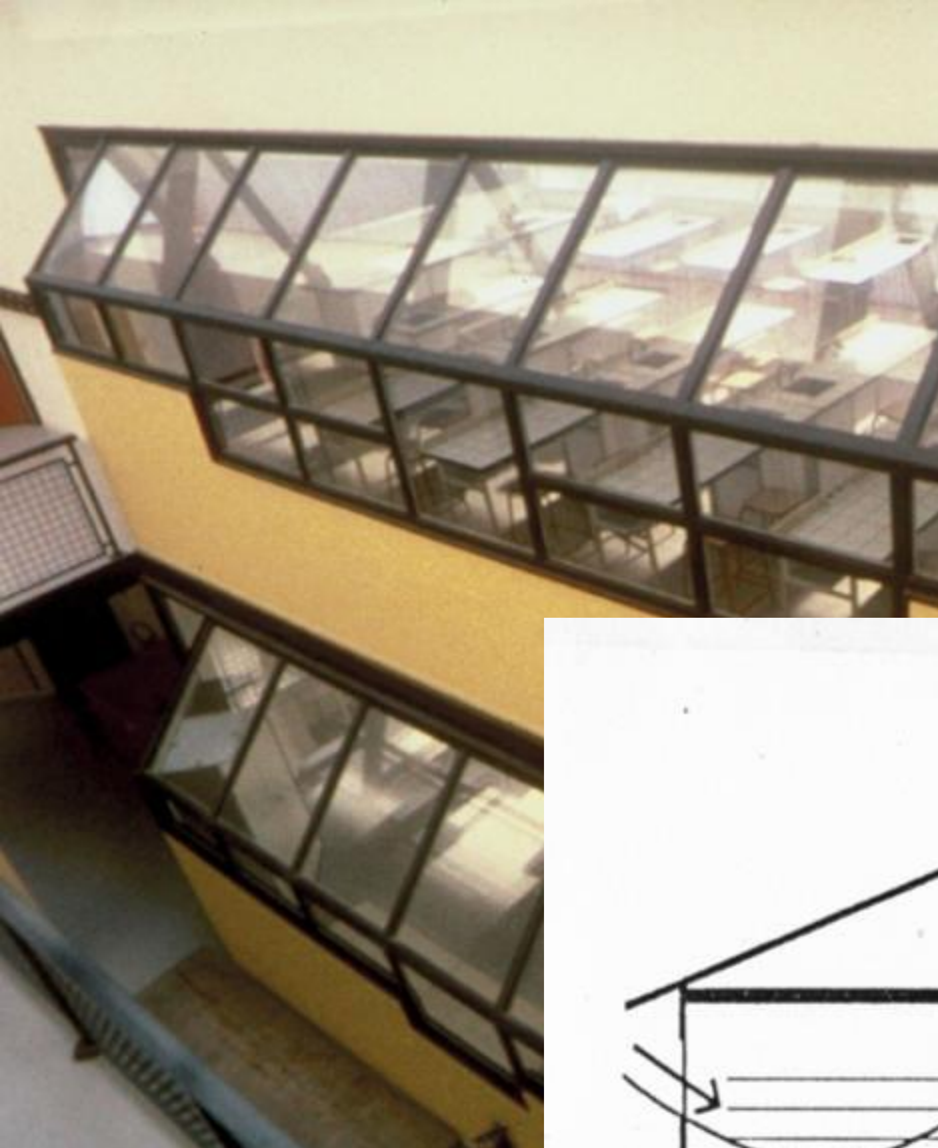
Pav. 5
5.0
4.0
3.0
2.0
1.0
0.0
Fator de Luz Naural
FLN (%)



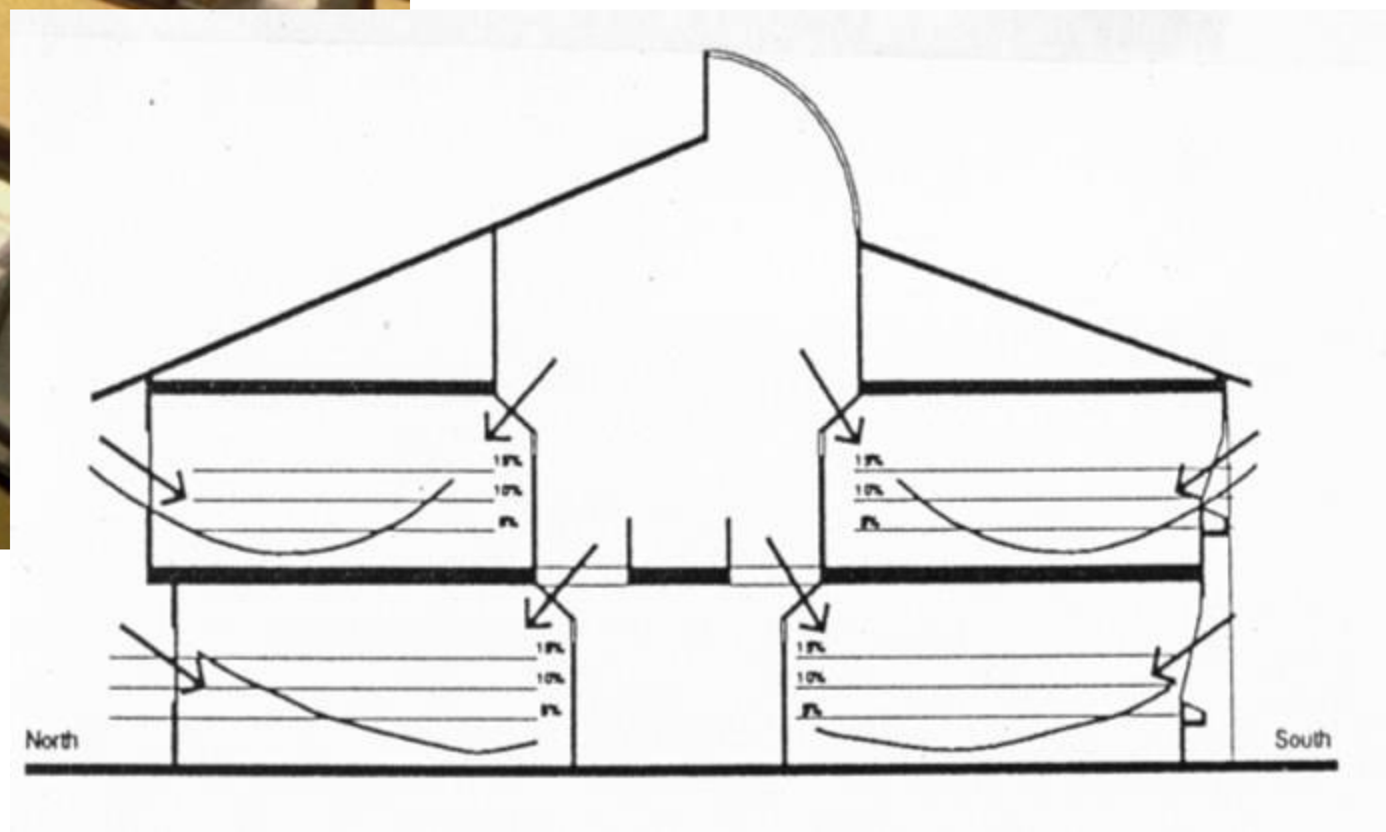
Pav. 2
5.0
4.0
3.0
2.0
1.0
0.0
Fator de Luz Naural
FLN (%)


wwr = 30%
wwr = 50%
wwr = 70%

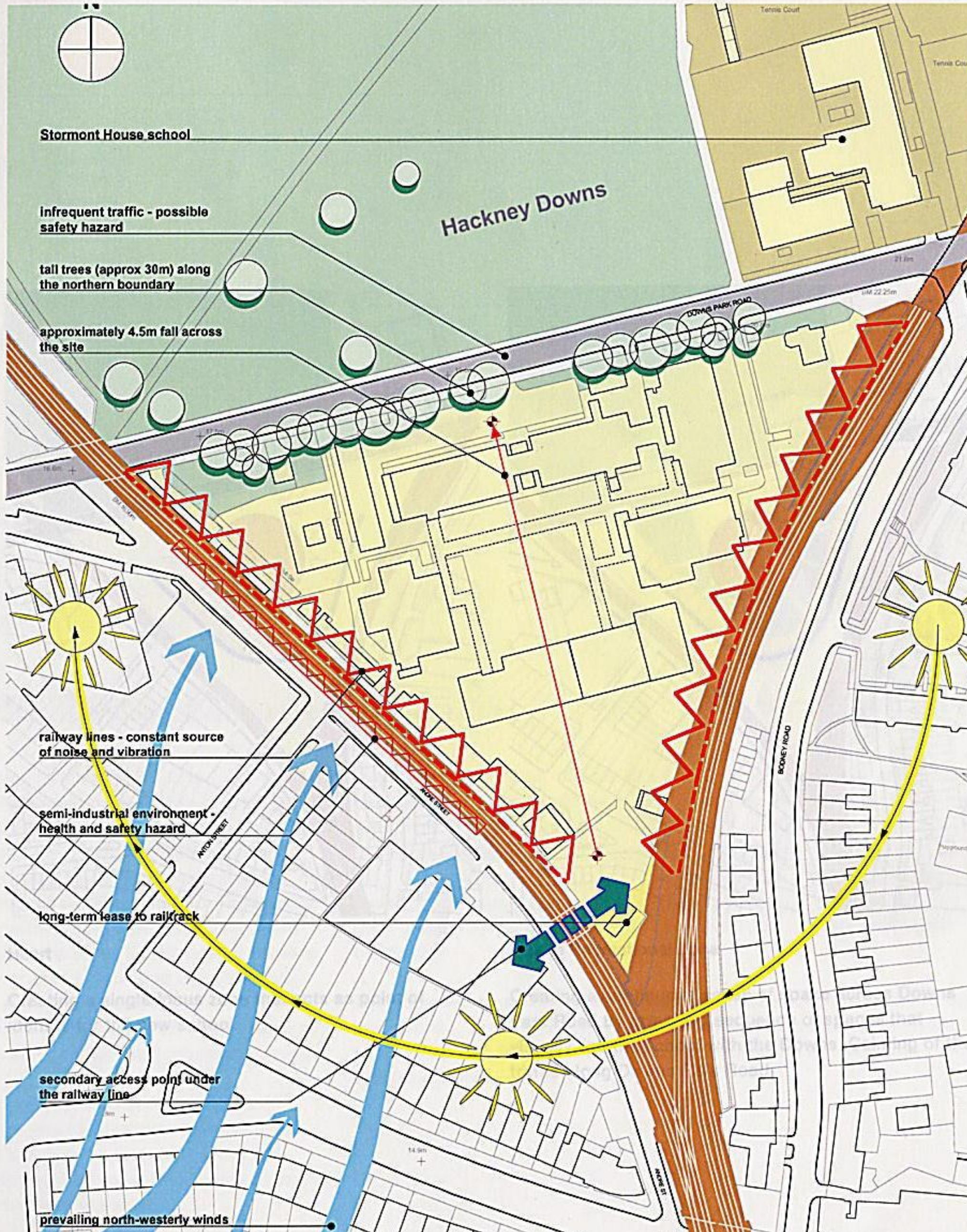
LUZ ZENITAL



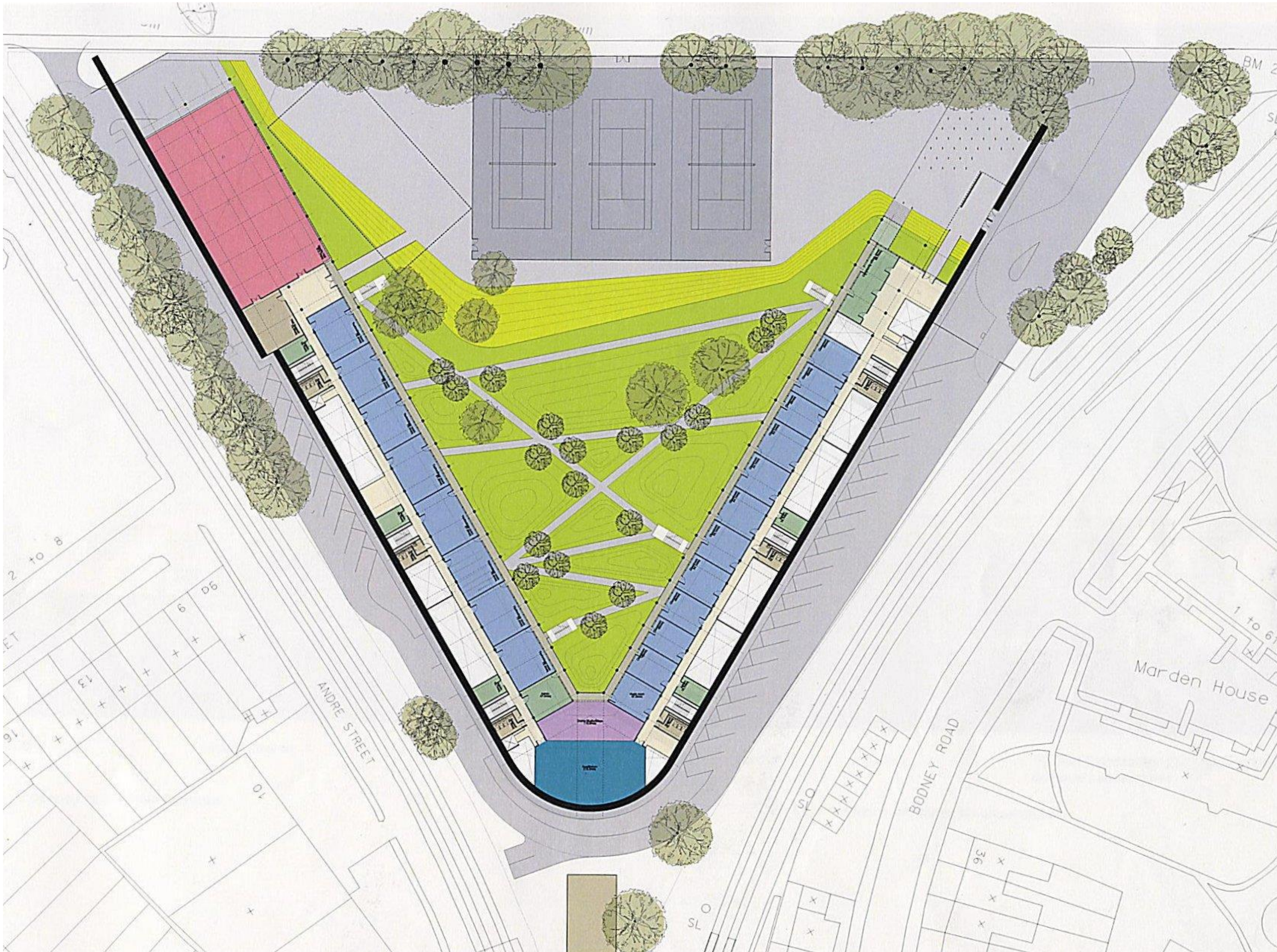
Secondary daylighting from atrium - angled glazing to increase light transmission



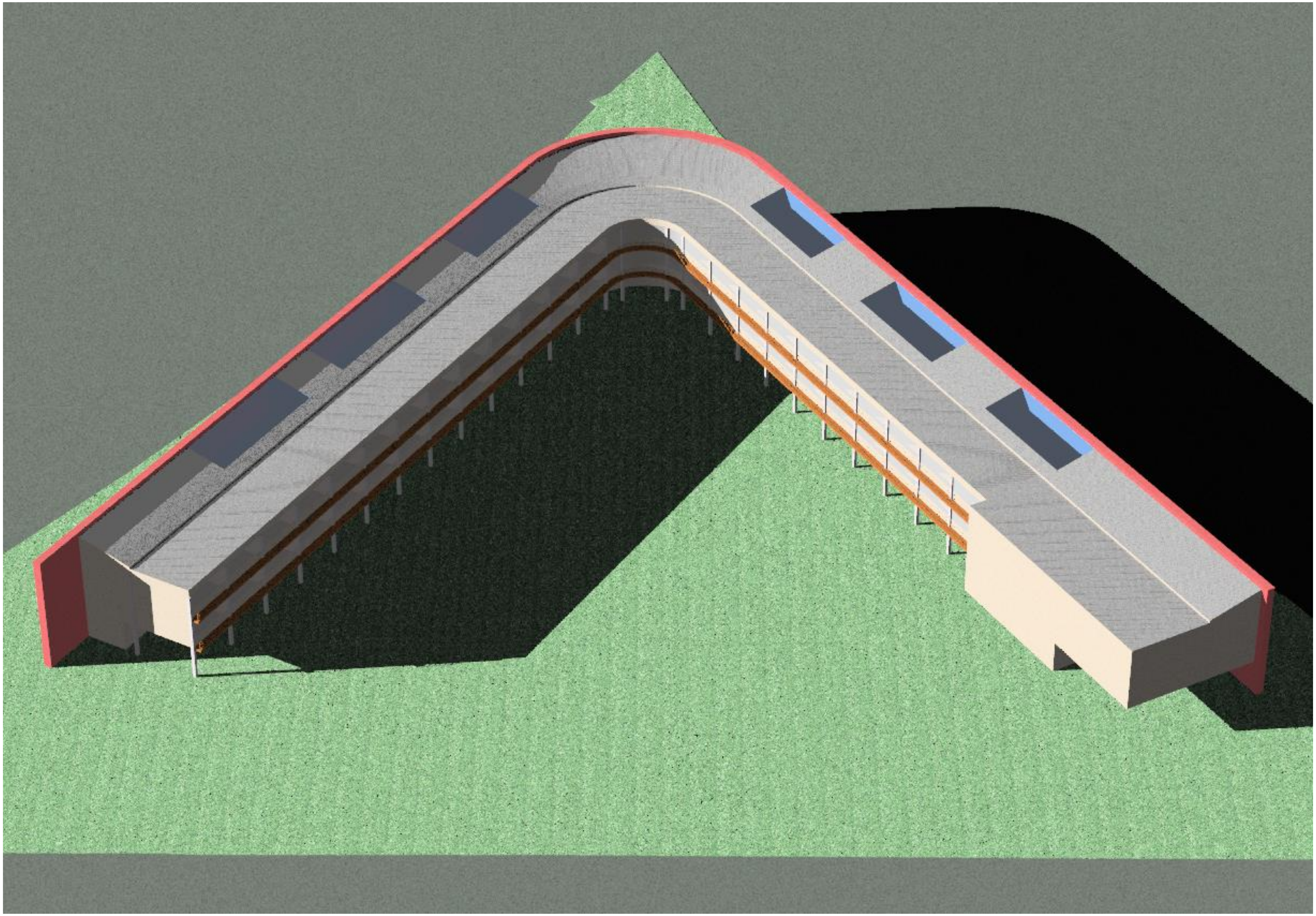
O uso da luz natural e a compatibilização com as questões da térmica dos ambientes

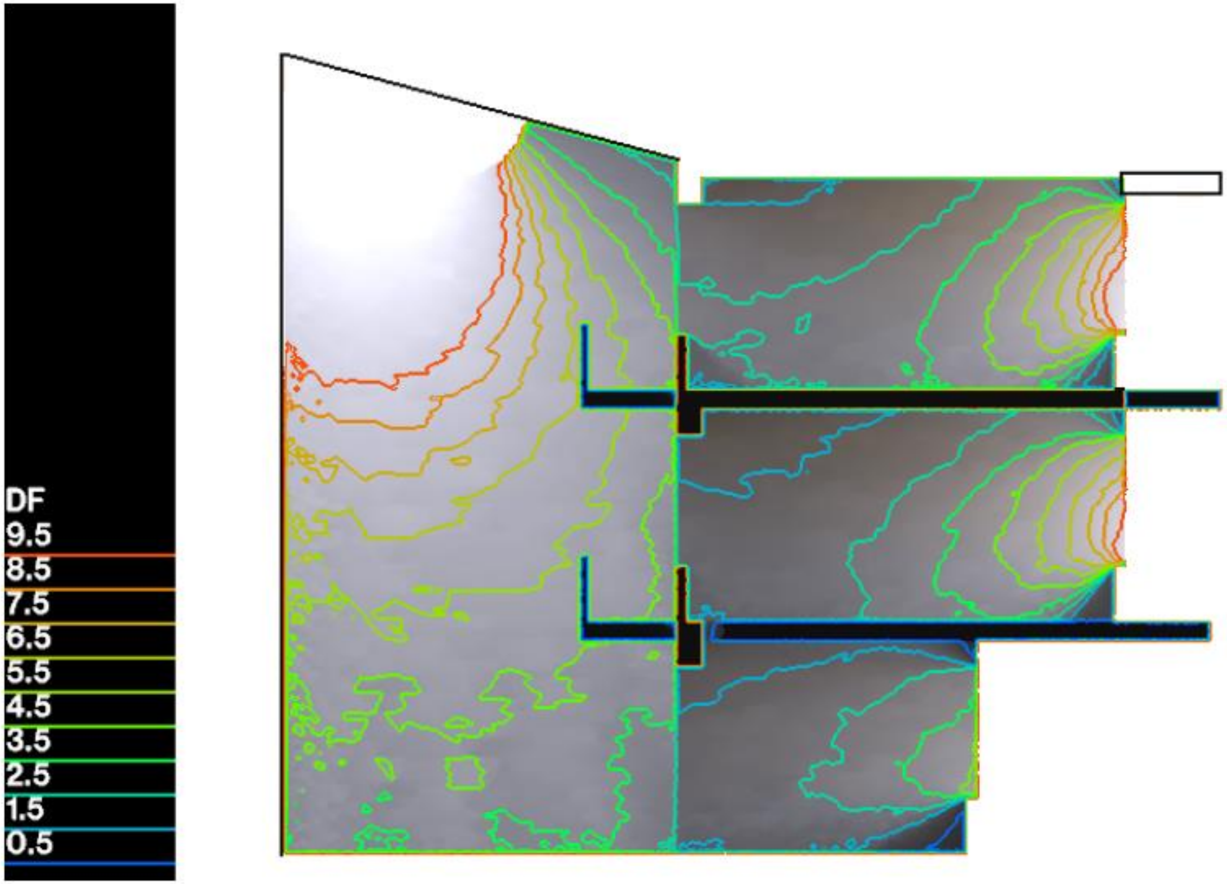


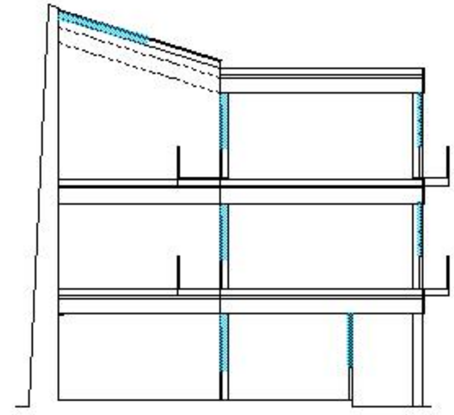
Site Analysis



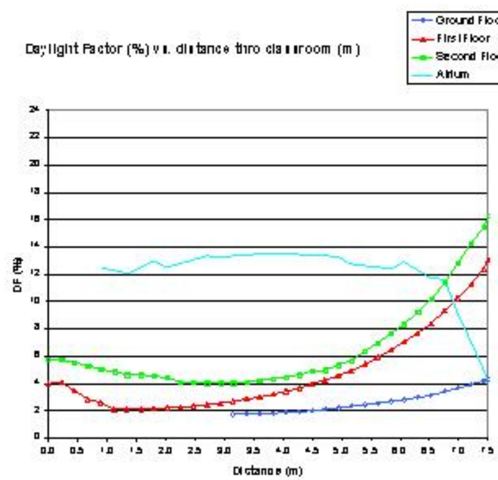
BM 22
SL
2 to 8
D6
6
13
16
10
ANDRE STREET
1 to 61
Marden House
BODNEY ROAD
SL
36
SL

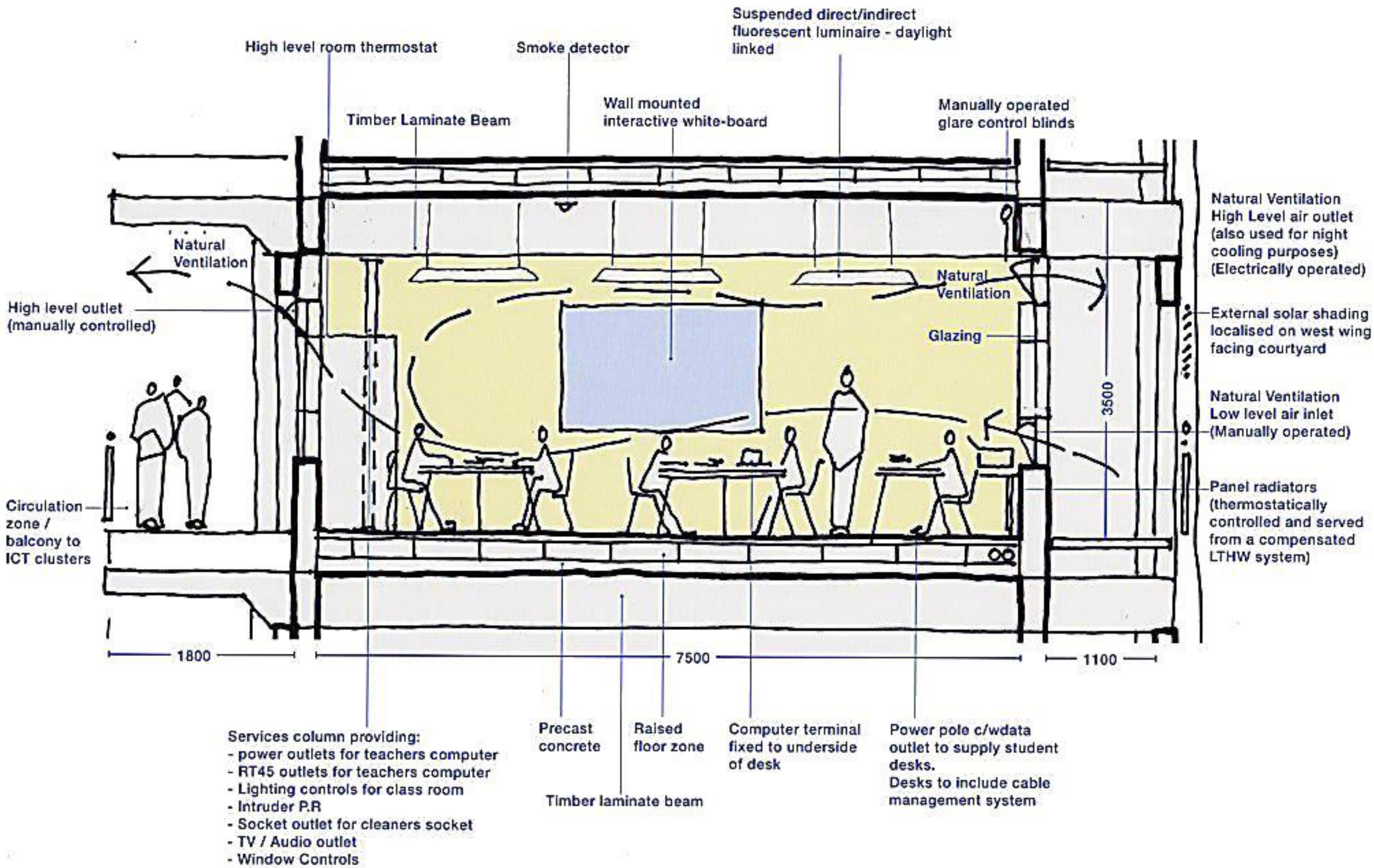



DF
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5
1.5
0.5



Option 4


Ground Floor
First Floor
Second Floor
Atrium
DF (%)
Distance (m)


Suspended direct/indirect fluorescent luminaire - daylight linked
High level room thermostat
Smoke detector
Wall mounted interactive white-board
Manually operated glare control blinds
Timber Laminate Beam
Natural Ventilation High Level air outlet (also used for night cooling purposes) (Electrically operated)
Natural Ventilation
Natural Ventilation
High level outlet (manually controlled)
External solar shading localised on west wing facing courtyard
Glazing
3500
Natural Ventilation Low level air inlet (Manually operated)
Panel radiators (thermostatically controlled and served from a compensated LTHW system)
Circulation zone / balcony to ICT clusters
1800
7500
1100
Services column providing:
- power outlets for teachers computer
- RT45 outlets for teachers computer
- Lighting controls for class room
- Intruder P.R
- Socket outlet for cleaners socket
- TV / Audio outlet
- Window Controls
Precast concrete
Raised floor zone
Computer terminal fixed to underside of desk
Power pole c/wdata outlet to supply student desks.
Desks to include cable management system
Timber laminate beam

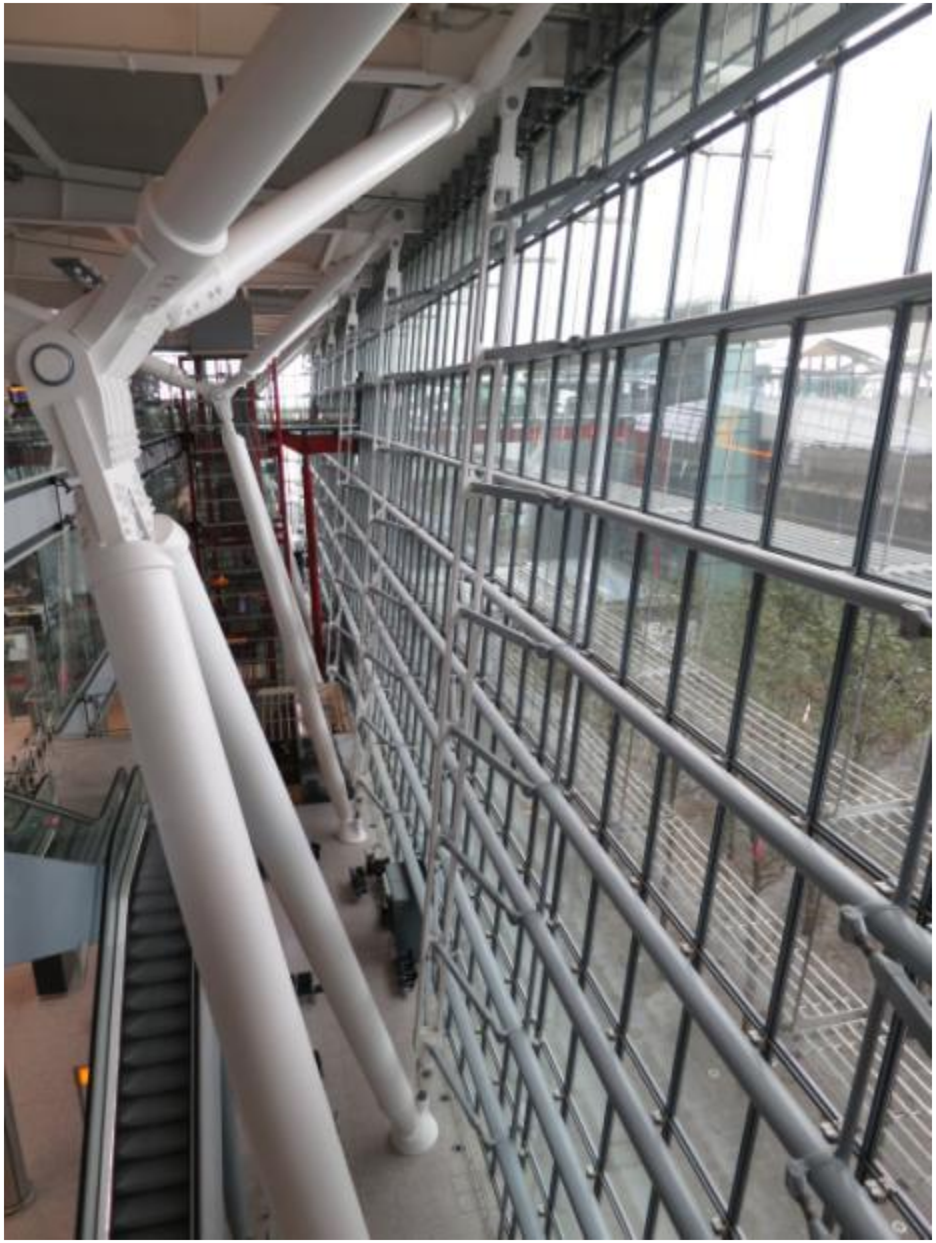

700

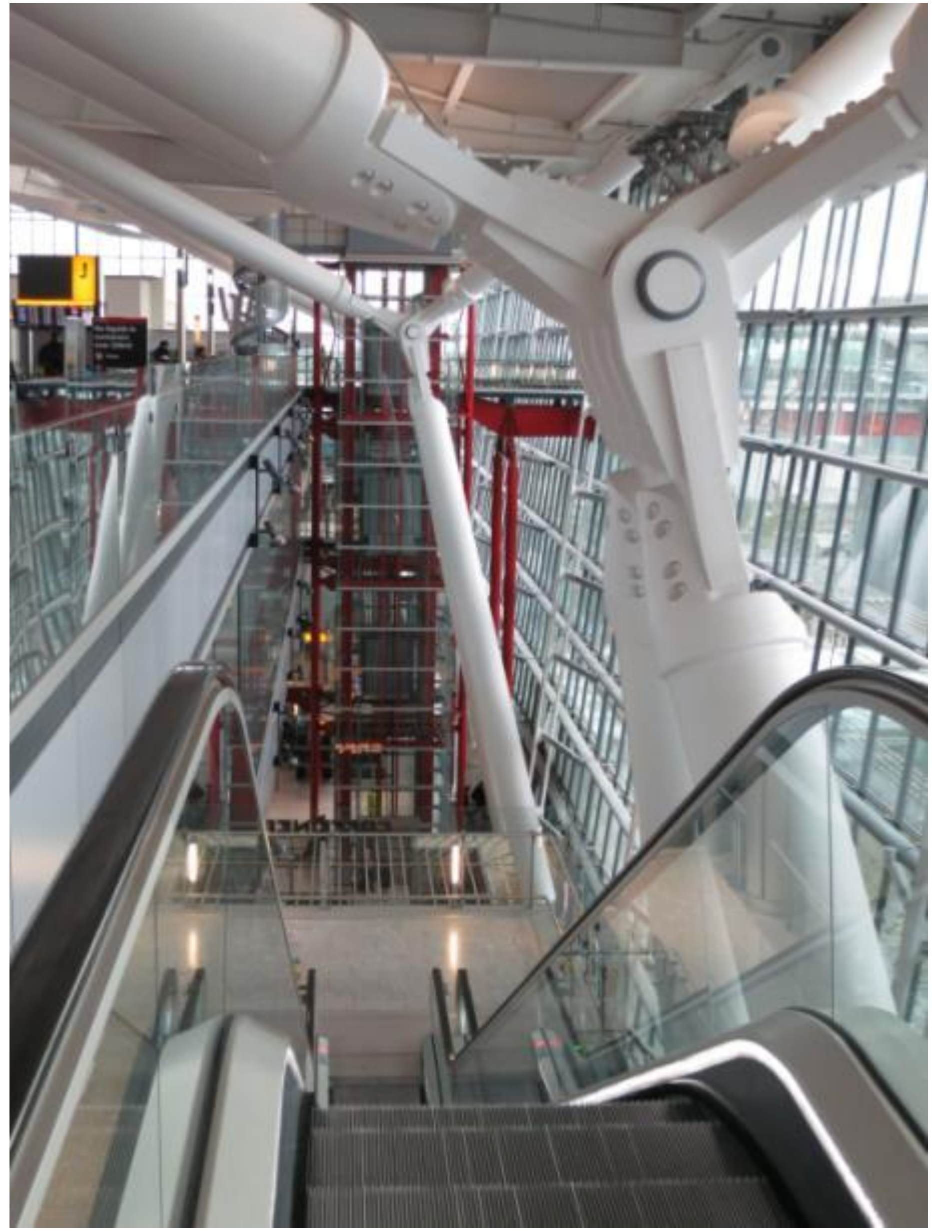

science

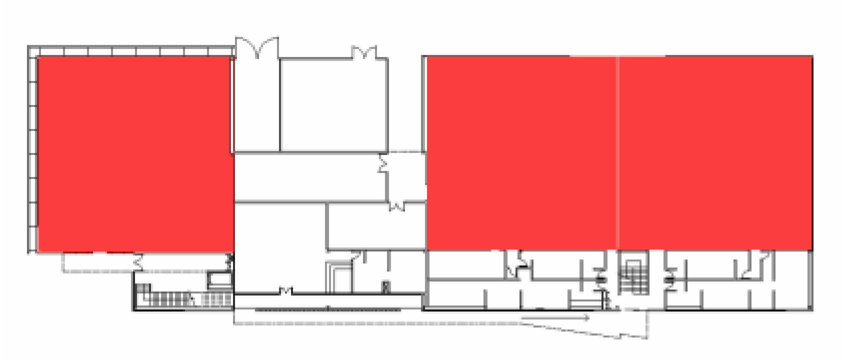
EDIFÍCIOS DE PLANTA FUNDA

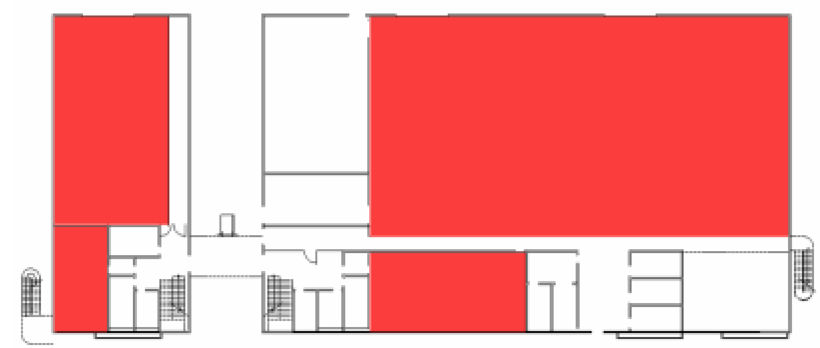
HEATHROW TERMINAL 5
Richard Rogers

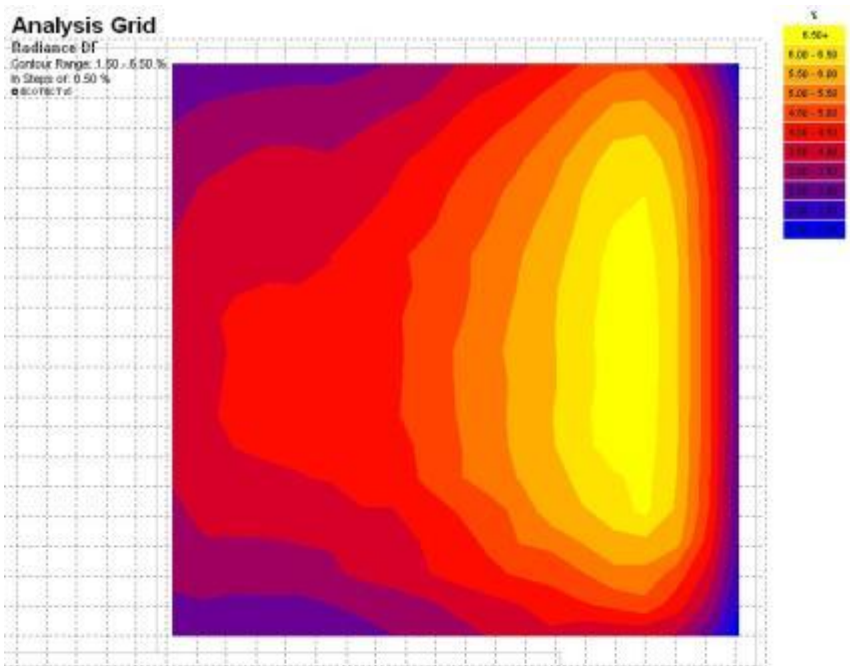

H

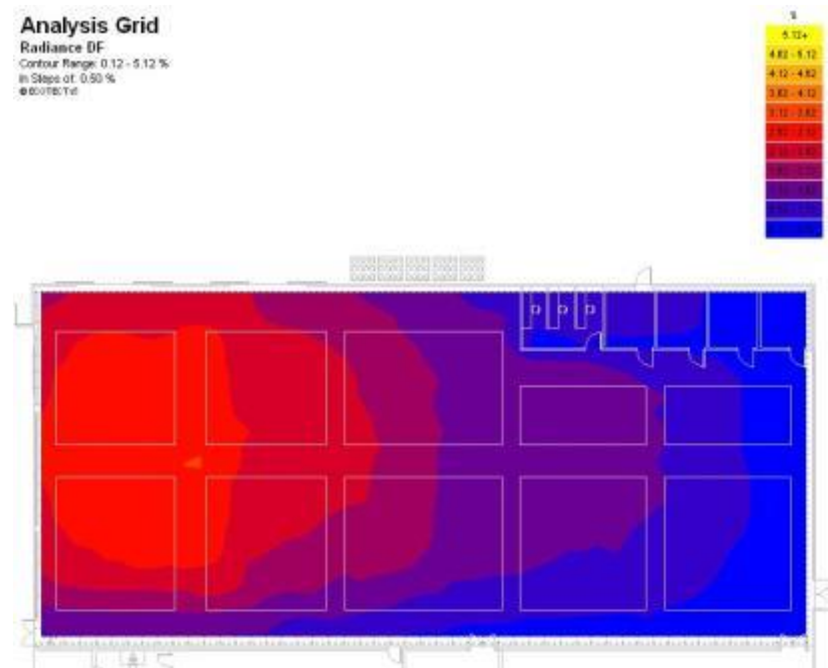



J

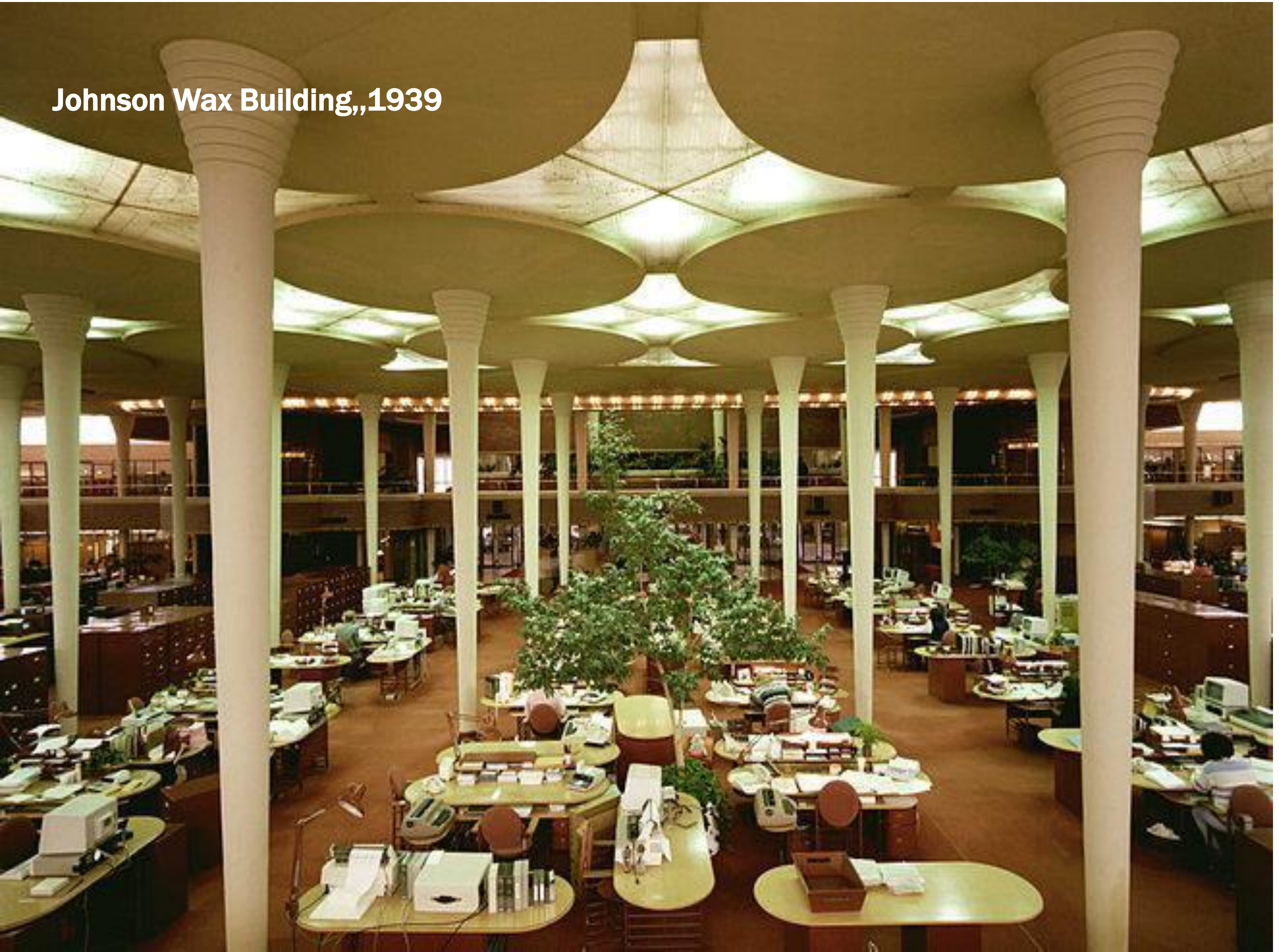






Analysis Grid
Radiance DF
Contour Range: 1.50 - 6.50 %
In Steps of: 0.50 %
6.50+
6.00 - 6.50
5.50 - 6.00
5.00 - 5.50


Analysis Grid
Radiance DF
Contour Range: 0.12 - 5.12 %
In Steps of: 0.50 %
5.12+
4.62 - 5.12
4.12 - 4.62

Johnson Wax Building,,1939



OBRIGADA!