

The
Phillips Exeter Academy
Library by Louis I. Kahn

lecturer: Michele Bruno architect

Founder of Kalisode network



Kahn teaching in the Furness Building at Penn, circa 1967

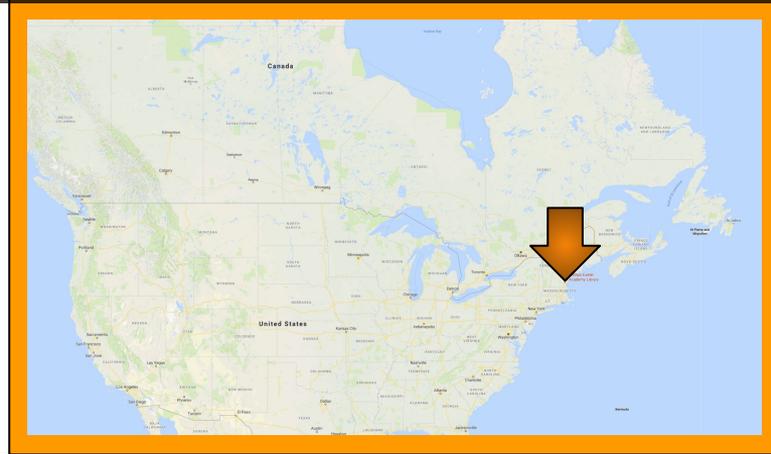




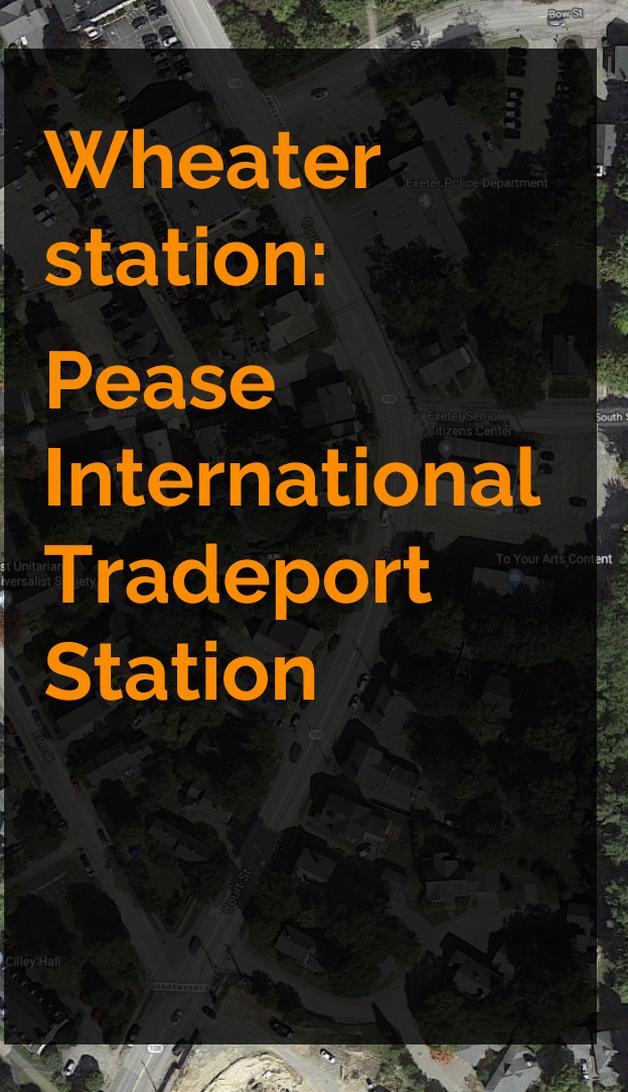




Exeter - New Hampshire - USA



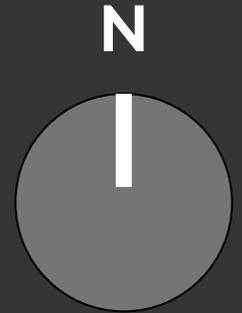
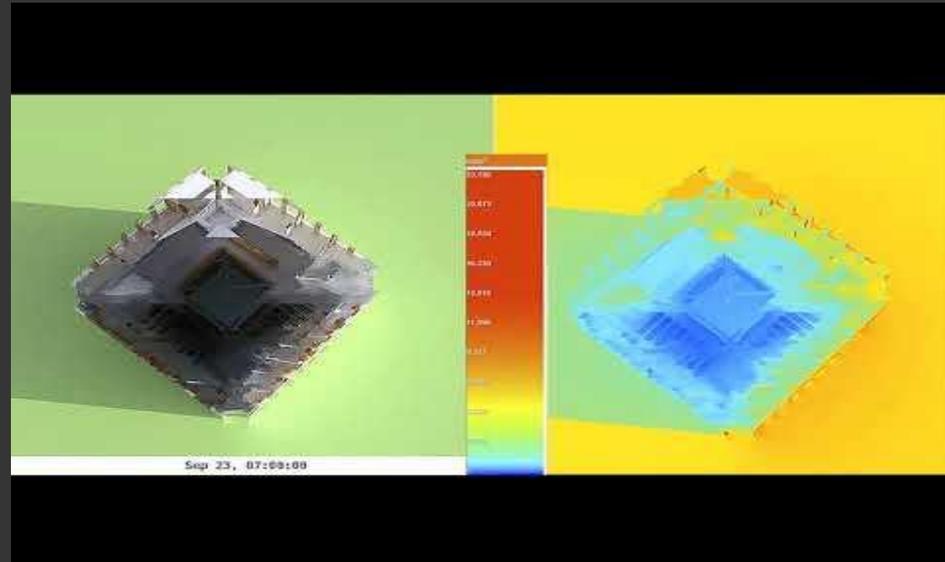
- moderate cold stress 2300h vs moderate heat stress 88
- strong cold stress 1539h vs strong heat stress 22
- comfort hours: 2902h



**Wheater
station:
Pease
International
Tradeport
Station**

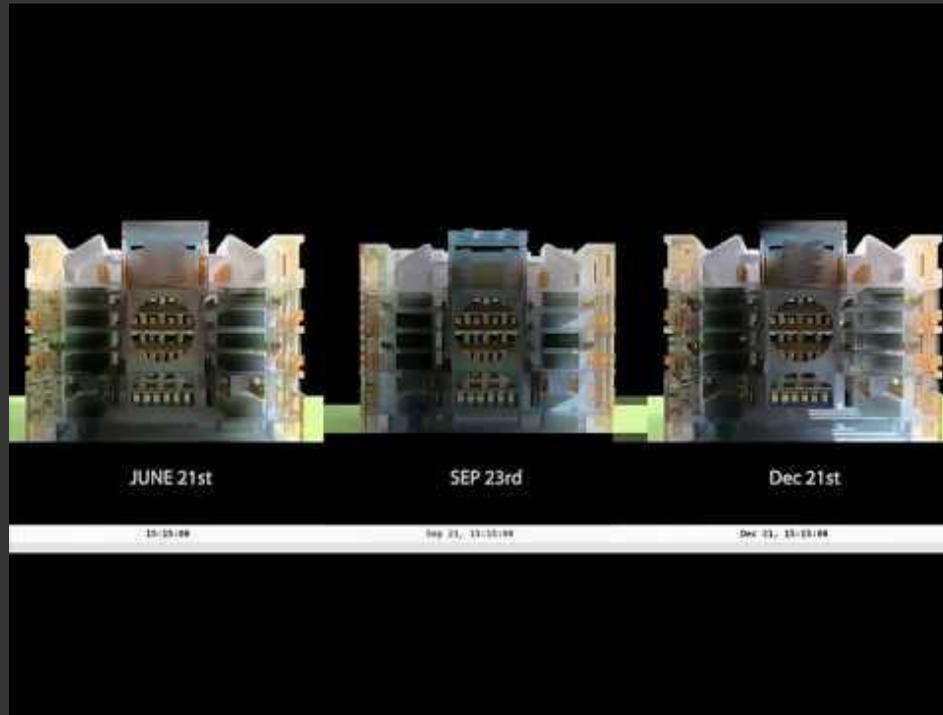


SUN-PATH



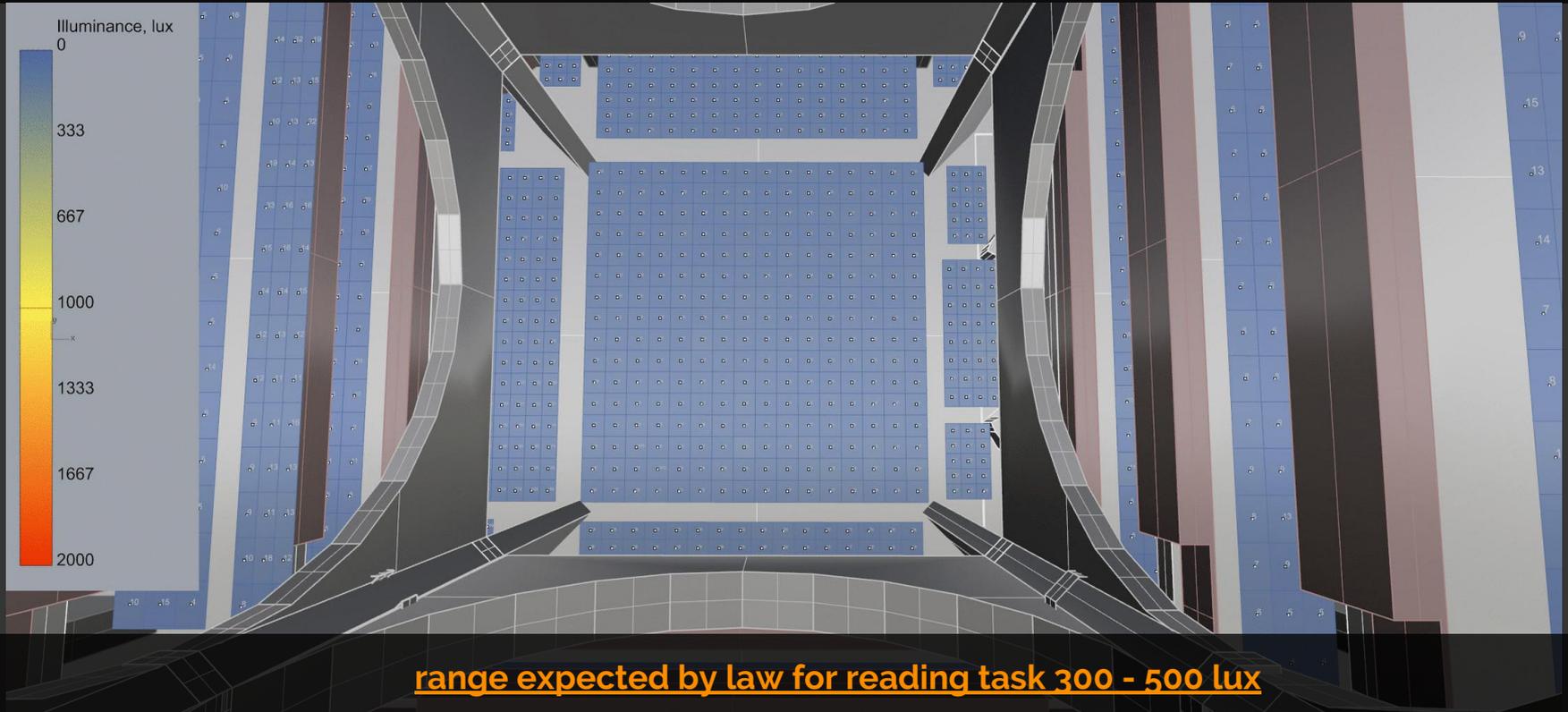
THE CENTRAL VOID

Section facing South-East



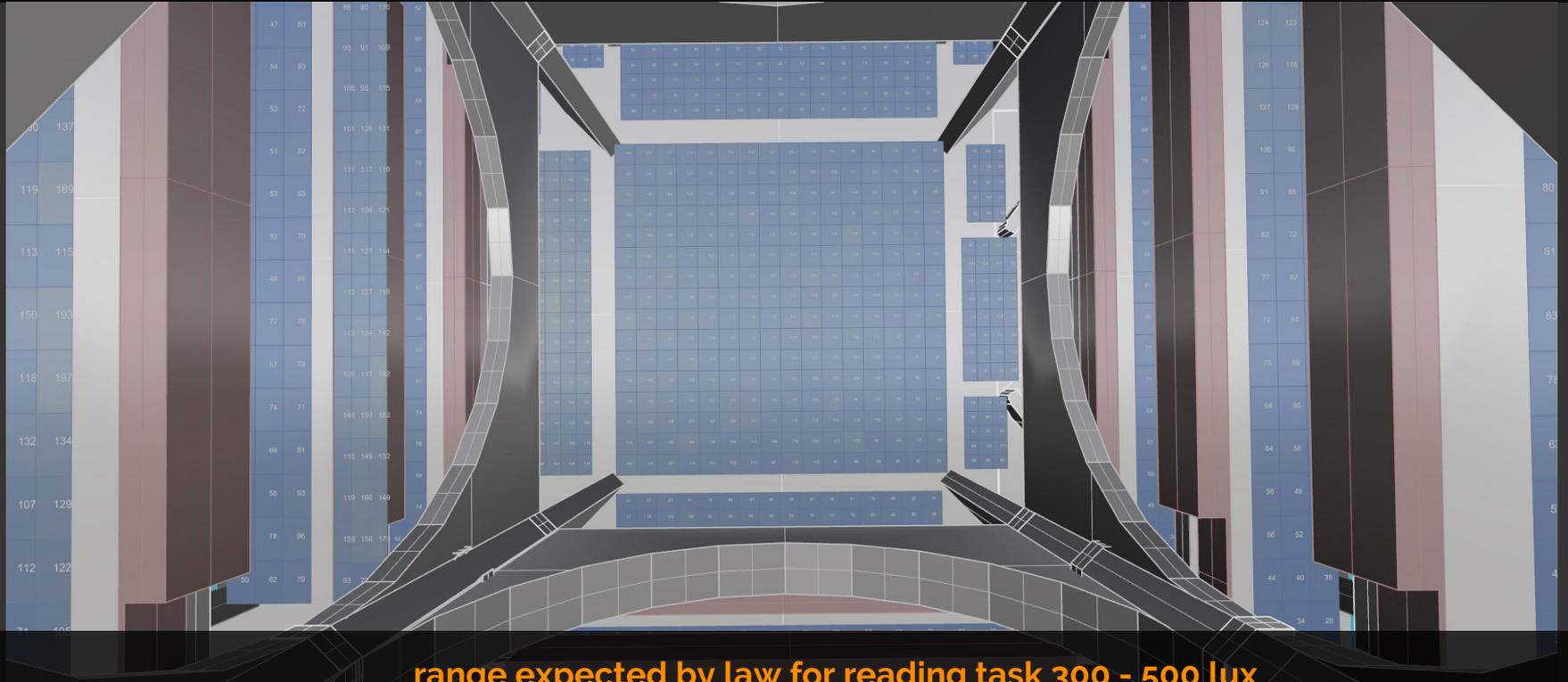
TOP-DOWN VIEW

ILLUMINANCE (lux) - 8:00 am - Equinox



TOP-DOWN VIEW

ILLUMINANCE (lux) - 12:00 am - Equinox



range expected by law for reading task 300 - 500 lux

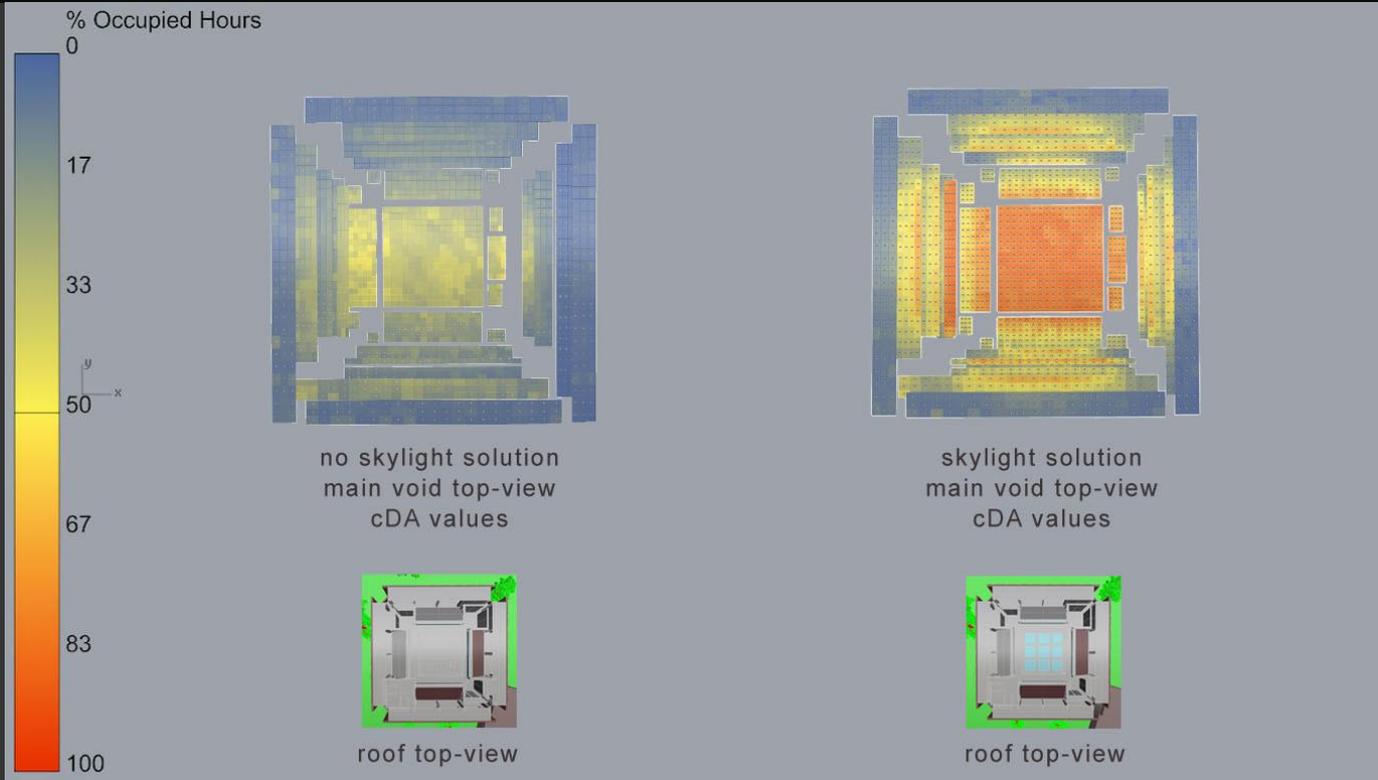
CROSS REFERENCE

Two different skylight solutions applied by Kahn



They are practically two following project: Phillips Exeter Library vs Yale Center for British Art

Skylight simulation - implementation



LEFT (cDA): 50% of time or more _ at least 300 lux = 0% of floor area

RIGHT (cDA): 50% of time or more _ at least 300 lux = 17% of floor area

Glare analysis - SE facing

1st JUNE

6/21 11:45 Imperceptible Glare (27% DGP)

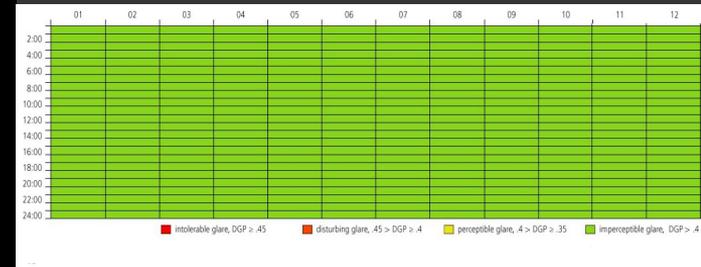


ORIGINAL KAHN SOLUTION
NO SKYLIGHTS

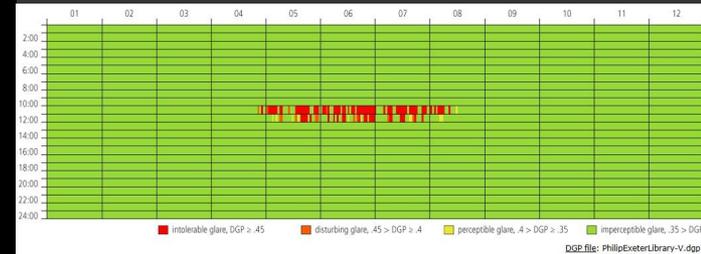
6/21 11:45 Imperceptible Glare (27% DGP)



9 SKYLIGHTS INVESTIGATION



ANNUAL GLARE PLOT
ORIGINAL KAHN SOLUTION
NO SKYLIGHTS



ANNUAL GLARE PLOT
9 SKYLIGHT SOLUTION

DGP file: PhilipExeterLibrary-V.dgp

Glare analysis - SE facing

13th SEPTEMBER
S-E facing views

9/23 11:45 Imperceptible Glare (24% DGP)

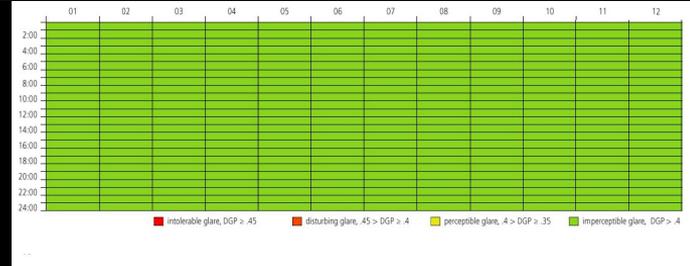


ORIGINAL KAHN SOLUTION
NO SKYLIGHTS

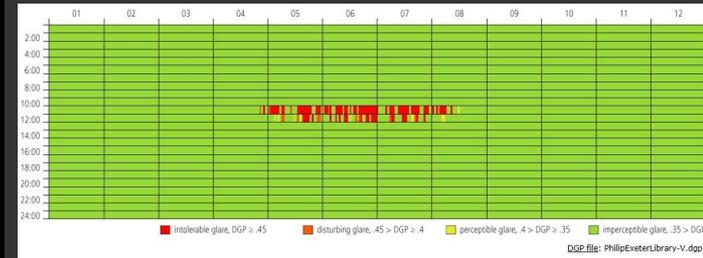
9/23 11:45 Imperceptible Glare (24% DGP)



9 SKYLIGHTS INVESTIGATION

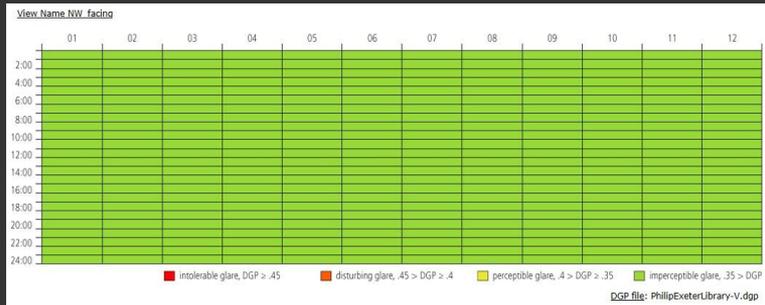


GLARE PLOT
ORIGINAL KAHN SOLUTION
NO SKYLIGHTS

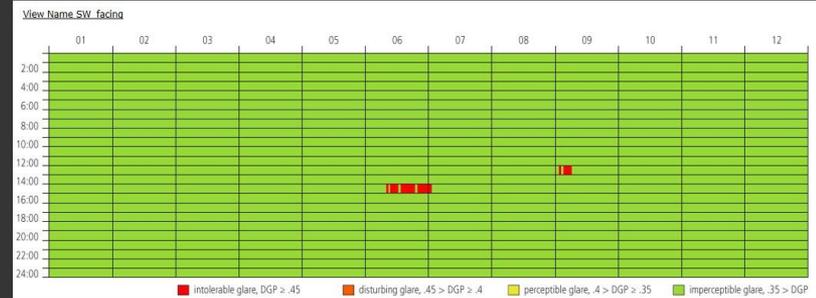


ANNUAL GLARE PLOT
9 SKYLIGHT SOLUTION

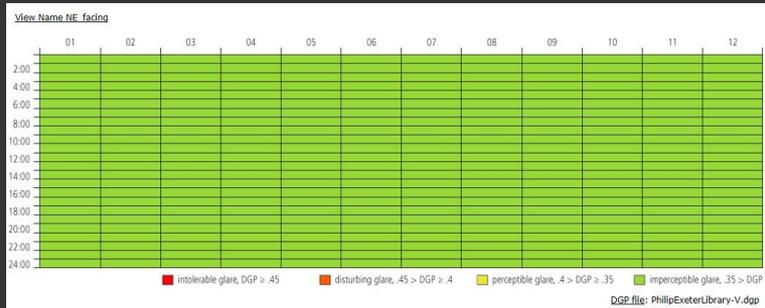
Glare analysis - 9 skylights solution



NW facing inner facade



SW facing inner facade



NE facing inner facade



SE facing inner facade

THE 4 FACADES

ILLUMINANCE (lux) - 8:00 am - Equinox - clear sky case



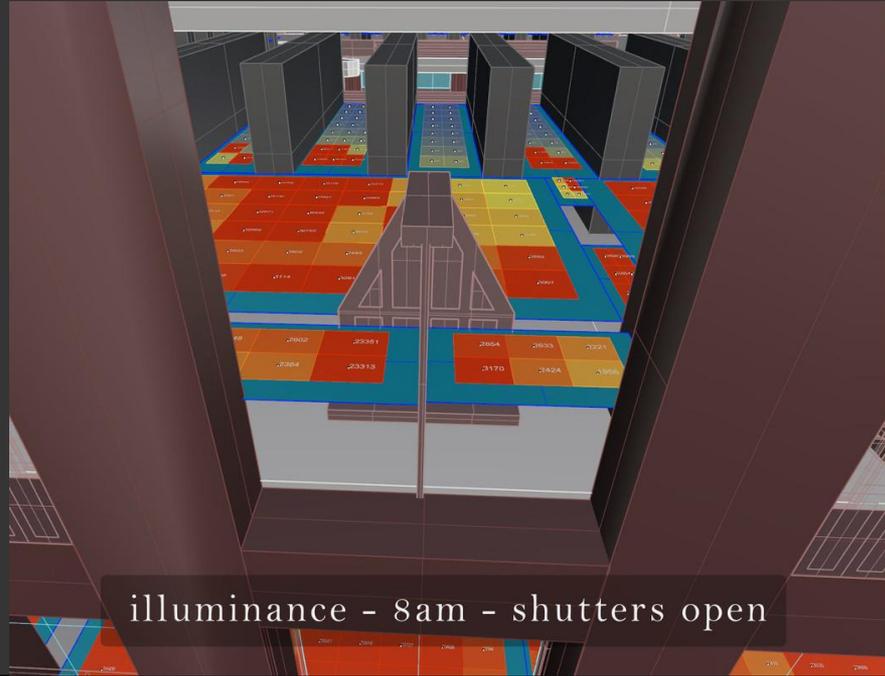
BEHIND THE SHUTTERS

How Kahn's light machine works

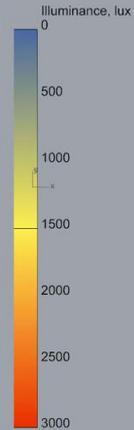


BEHIND THE SHUTTERS

How Kahn's light machine works - clear sky case



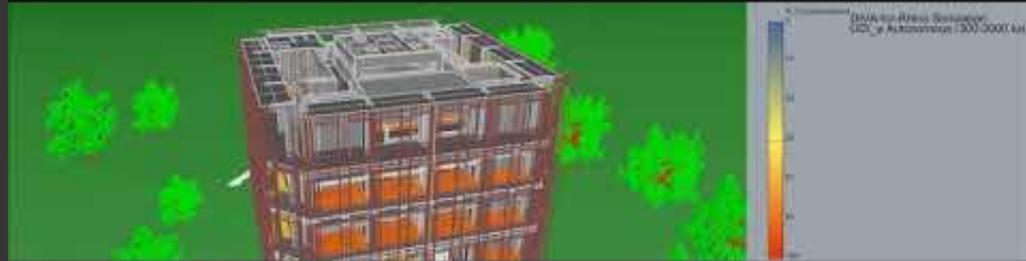
illuminance - 8am - shutters open



illuminance - 8am - shutters closed

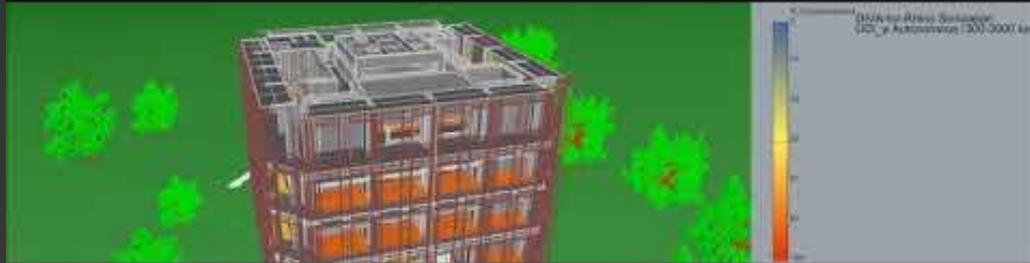
THE 4 FACADES

sDA300lux_50% - annual metric



THE 4 FACADES

UDI_300_3000lux - annual metric



THANKS FOR YOUR ATTENTION !

“I sense Light as the giver of all presences, and material as spent Light.
What is made by Light casts a shadow, and the shadow belongs to Light.”

Louis I. Kahn

Acknowledgments:

special thanks for the 3D modellation to Kristiyan Lyubenov and for the kind concession of the images to Xavier de Jauréguiberry.