Analyzing Occupants Experience on the Perimeter

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A legacy of positive change
We are an international team of environmental design consultants and lighting designers focused on delivering sustainability to the planned and built environment.
How We Define Occupants Experience on the Perimeter and Why it is Important

Occupants Experiences on the Perimeter:
- Glare (Direct Sunlight & Overall Brightness)
- Useful Daylight Availability
- Thermal Comfort (Solar Radiation & Draft)
- Controllability / Adaptability
Precedent Perimeter Comfort Study

FORUM ENVIRONMENTAL SECTION EXPLORING THE RELATIONSHIP BETWEEN OPERABLE GLAZING AREA, EXTERNAL SHADING, AND DESIRED AIRFLOW PATH
**Precedent Perimeter Comfort Study**

SOUTHEAST FACADE - EFFECTIVE SOLAR HEAT COEFFICIENT

EFFECTIVE SHGC: 0.12  
(AVERAGE ON SOUTHEAST FACADE)

EFFECTIVE SHGC  
JANUARY THROUGH APRIL, 8AM - 12 PM

SOUTHEAST FACADE - EFFECTIVE SOLAR HEAT COEFFICIENT

EFFECTIVE SHGC: 0.23  
(AVERAGE ON NORTHWEST FACADE)

EFFECTIVE SHGC  
JANUARY THROUGH APRIL, 12PM - 5 PM
Precedent Perimeter Comfort Study
NYC Office Fit Out Study

TYPICAL FLOOR
Open office area oriented to the West
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**VISUAL COMFORT AT WORK SURFACE**

Provide Useful Daylight on the Worksurfaces (300-3,000 lux for at least 50% of the year)

Avoid Excessive Illuminance and Direct Sunlight on the work surfaces and Monitor (target <700 lux on a display)

**GLARE**

Avoid Orientations and Worstation Placement where Vertical Illuminance is Above 2,700 lux

**THERMAL COMFORT**

Avoid Workstations in the Areas with Direct Sunlight

**VIEWS AVAILABILITY**

Design to Reduce Amount of Hours When the Blinds Will be Drawn Down
NYC Office Fit Out Study

VISUAL COMFORT AT WORK SURFACE
- Provide Useful Daylight on the Work surfaces (300-3,000 lux for at least 50% of the year)
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GLARE
- Avoid Orientations and Workstation Placement where Vertical Illuminance is Above 2,700 lux

THERMAL COMFORT
- Avoid Workstations in the Areas with Direct Sunlight

VIEWS AVAILABILITY
- Design to Reduce Amount of Hours When the Blinds Will be Drawn Down

BUFFER ZONE ON PERIMETER
- Leave Overlit Exposed to the direct Sunlight Perimeter Zone for Transition area, Temporary Work stations and lounges

WORKSTATION LAYOUT
- Orient Workstations and Seating to Avoid Occupants Glare and Direct / Excessive Daylight on the Work Surfaces

BLINDS OPERATION
- Automated Interior Shades to Take Maximum Advantage of the Daylight
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Environmental Design Consultants + Lighting Designers
45 East 20th Street, 4th Floor New York NY 10003    T +1 (212) 254 4500    atelierten.com

Average Annual Illuminance with Optimized Design

XX% Hours more access to the views
XX% Of the work space in the direct sunlight

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AVERAGE ANNUAL ILLUMINANCE [LUX]

DISTANCE FROM THE FACADE [FT]

4 32 8 36 12 40 16 44 20 48 24

USEFUL DAYLIGHT

SENSE OF DAYLIGHT

ANNUAL AND SEASONAL FALL-OFF GRAPH [WEST FACADE]

>3,000 lux Overlit, Potential Glare and Potential Thermal Discomfort due to the Direct Solar Radiation

300 - 3,000 lux Useful Daylight

150 - 300 lux Sense of Daylight

0 300 3,000

AVERAGE ANNUAL ILLUMINANCE [LUX]

N

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Potential glare from 4pm to 7pm March through May

- DGP 24% Imperceptible Glare
  4/21 6:00 PM

Potential glare from 6pm to 7pm April through August

- DGP 42% Disturbing Glare
  4/21 6:00 PM
- DGP 100% Intolerable Glare
  6/21 6:00 PM
- DGP 24% Imperceptible Glare
  6/21 6:00 PM
- DGP 100% Intolerable Glare
  6/21 6:00 PM
NYC Office Fit Out Study

Potential glare from 6pm to 7pm May through August

Potential glare from 4pm to 7pm April through September

Potential glare from 5pm to 7pm May through August
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WORKSTATION ORIENTATION SENSITIVITY STUDY

ILLUMINANCE ON THE MONITOR
[<700 LUX]

ILLUMINANCE AT OCCUPANTS EYE
[<2,700 LUX]

VERTICAL ILLUMINANCE AUTONOMY
[Percent of the light hours a year the point receive illumines above threshold]

0% 50% 67% 85% 100%
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Vertical Illuminance Autonomy
[Percent of the light hours a year the point receive illuminance above threshold]

MONITOR VISIBILITY [>700 LUX]

POTENTIAL GLARE [>2,700 LUX]
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TEST POINTS LOCATION

15% Potential Glare
40% Overlit Monitors

32% Potential Glare
70% Overlit Monitors

AVERAGE HOURLY ILLUMINANCE - South Orientation

AVERAGE HOURLY ILLUMINANCE - West Orientation

Legend:
- NIGHT HOURS
- OVERLIT MONITORS
- POTENTIAL GLARE
- VISUAL COMFORT
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SHADES SCHEDULES WEST WINDOW

SHADES SCHEDULES SOUTH WINDOW
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TEST POINTS LOCATION

VISUAL COMFORT WITHOUT SHADES

VISUAL COMFORT WITH SHADES
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+47% MORE VIEWS

-15% POTENTIAL GLARE ANNUALLY

-32% OVERLIT MONITOR

NO MEAN RADIANT TEMPERATURE DISCOMFORT ON PERMANENT WORKSTATIONS