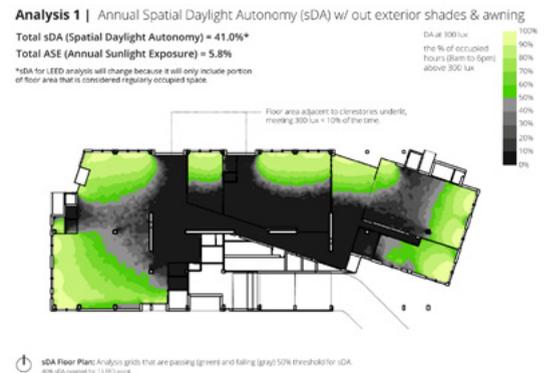




Daylighting is a critical component of sustainability for several reasons. First, it allows for less artificial light to be used during the day in buildings. Second, it is attributable to better user comfort and performance by connecting building occupants with the outdoors and reinforce circadian rhythms.

The Mount Vernon Library Commons was designed with the assistance of the Integrated Daylighting Lab (UW) to optimize the daylighting and solar shading (and also the PV Array angle). Spatial Autonomy was studied for both the ground floor and parking levels to understand how much and how far natural light would reach into the spaces.

DAYLIGHTING

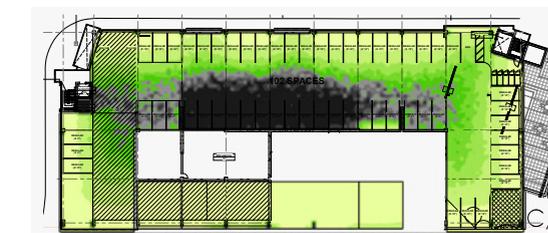


sDA Floor Plan: Analysis grids that are passing (green) and failing (gray) 50% threshold for sDA. sDA needed for 1 LEED point.

Analysis 4: Parking Study | Annual Spatial Daylight Autonomy (sDA) - Scenario 1

SCENARIO #	SOLAR PANELS	NORTH MARQUEE SCREENS	GUARDRAILS	sDA
1	NO	PERF METAL	48" HIGH, SOLID	73.7%

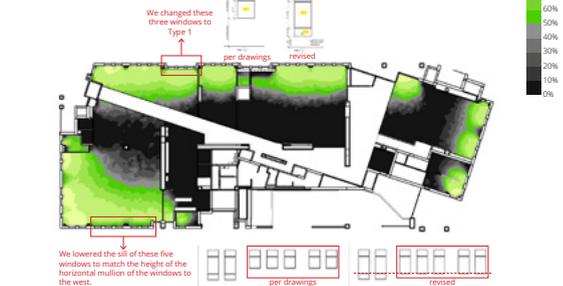
DA at 300 lux: the % of occupied hours (8am to 6pm) above 300 lux



sDA Floor Plan: Analysis grids that are passing (green) and failing (gray) 50% threshold for sDA.

Spatial Daylight Autonomy (sDA) | Modeled with modified glazing

Total sDA (Spatial Daylight Autonomy) = 40.1%
 Total ASE (Annual Sunlight Exposure) = 5.3%



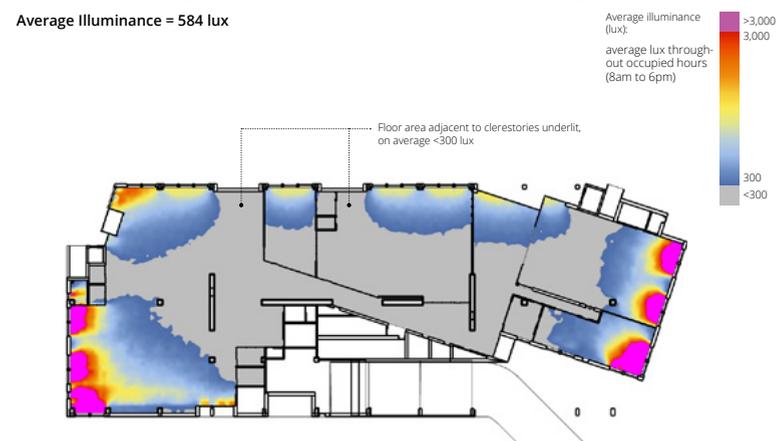
sDA Floor Plan: Analysis grids that are passing (green) and failing (gray) 50% threshold for sDA. 40% sDA needed for 1 LEED point.

Spatial Daylight Autonomy

- The percentage of floor area in regularly occupied spaces that receives > or equal to 300 lux for @ least 50% of the annual occupied hours.

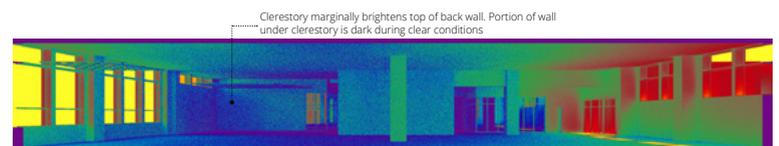
Analysis 1 | Average Illuminance w/ out exterior shades & awning

Average Illuminance = 584 lux

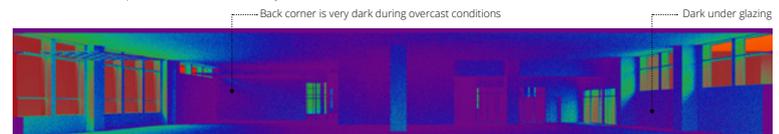


Average Illuminance Floor Plan: Average illuminance during regularly occupied hours. <300 lux is underlit and >3,000 lux is overlit

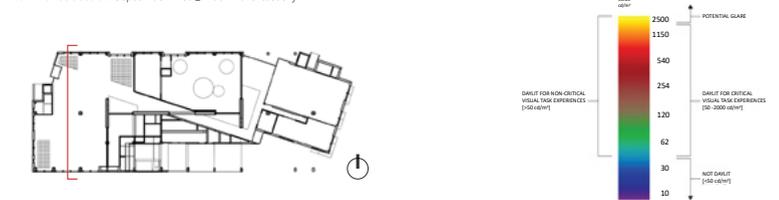
Analysis 2: Luminance Section | September 21st @ noon



Luminance Section: September 21st @ noon - clear sky



Luminance Section: September 21st @ noon - overcast sky

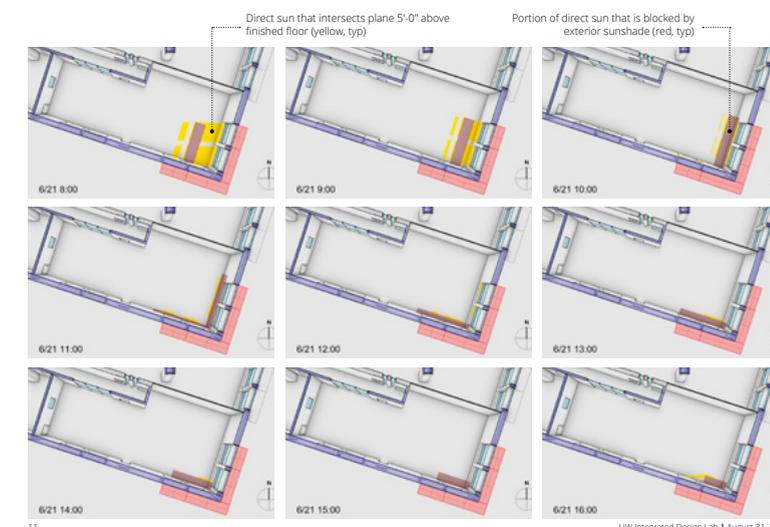


Luminance

- A measure of luminous intensity per unit area traveling (green to red best for task lighting)

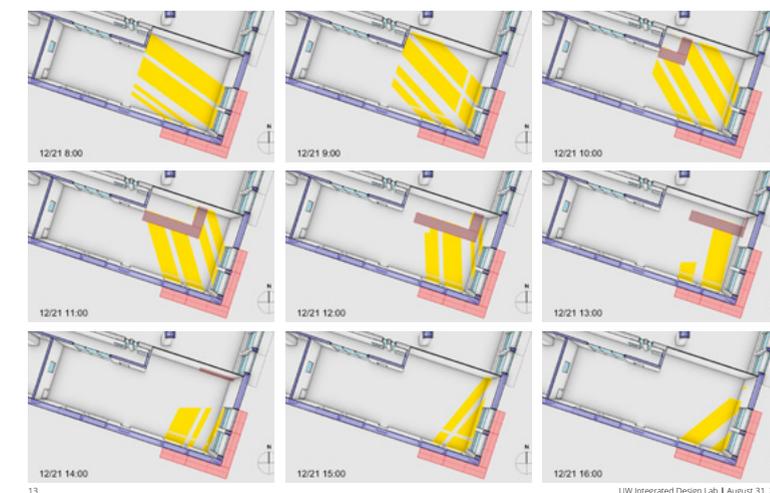
Analysis 3: Kitchen Direct Sun | Exterior shade performance - June 21st

Almost all direct sun is blocked (@ 5' above floor) by exterior sunshades after 8am.



Analysis 3: Kitchen Direct Sun | Exterior shade performance - December 21st

Direct sun throughout the day. Interior roller shades or other shading device recommended.



Shading

- Performance of sun shades effectively blocking direct sun throughout the year. Top is Summer Solstice; bottom is Winter Solstice.