

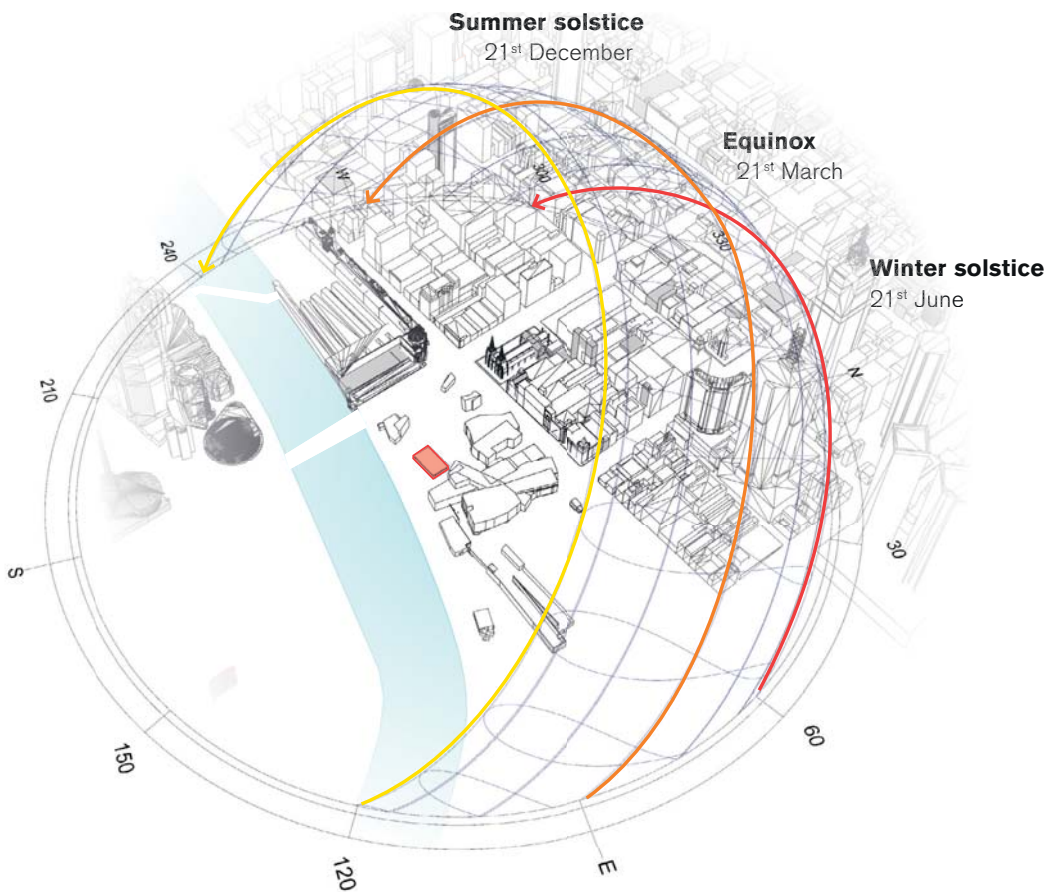
b. Façade Strategy

In order to minimise solar gain and energy consumption we propose external shading.

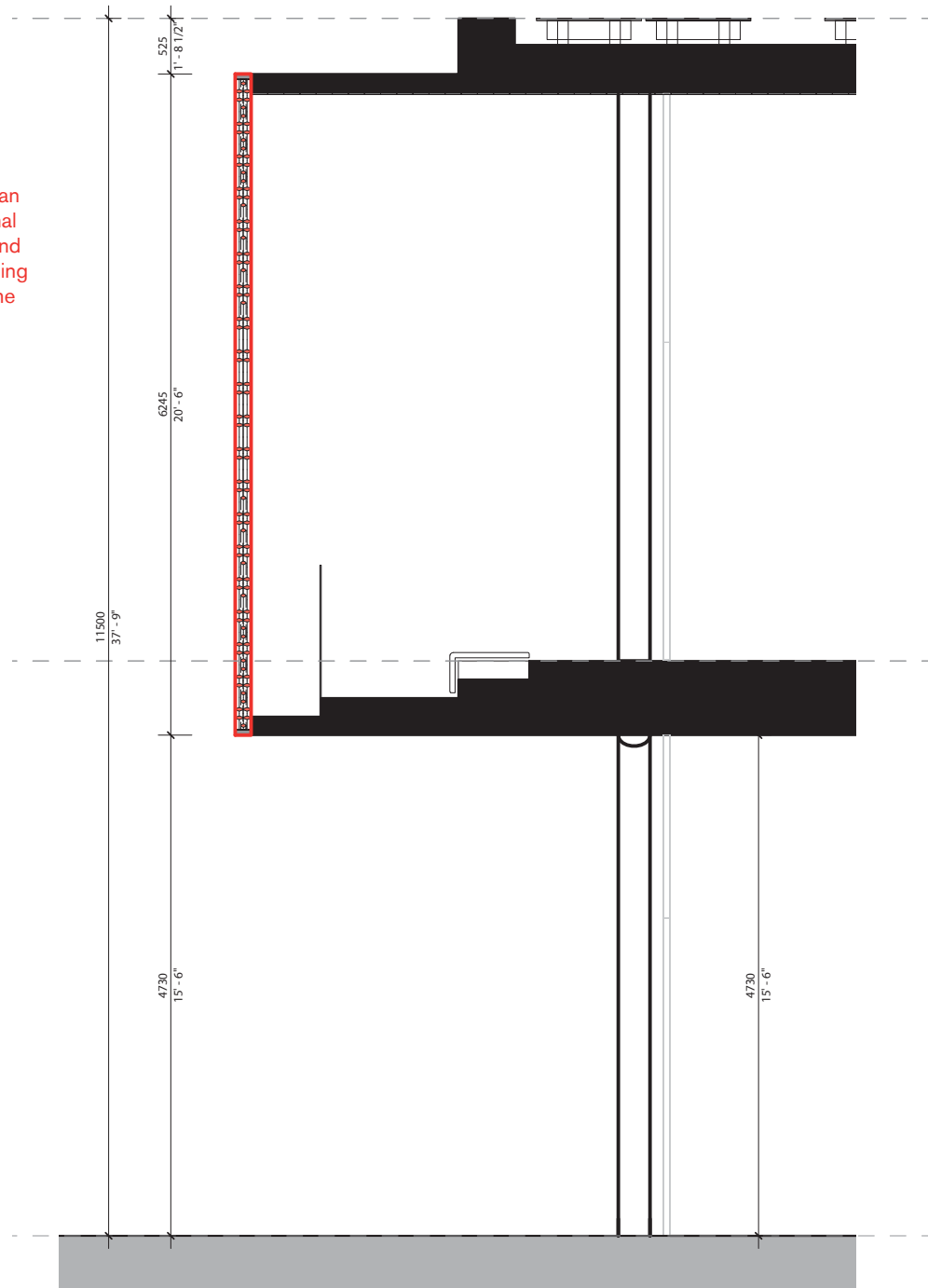
Further studies will determine the exact requirements and consequential design aspirations for the shading. The shading will be developed specifically for the unique context and needs of Federation Square. The shading panels will be modular and operable in order to engage with the surrounding public space.

The following pages indicate a range of possibilities for inspiration - taken from similar projects with a textured panel and a solution with turning frames filled with a grid of rods.

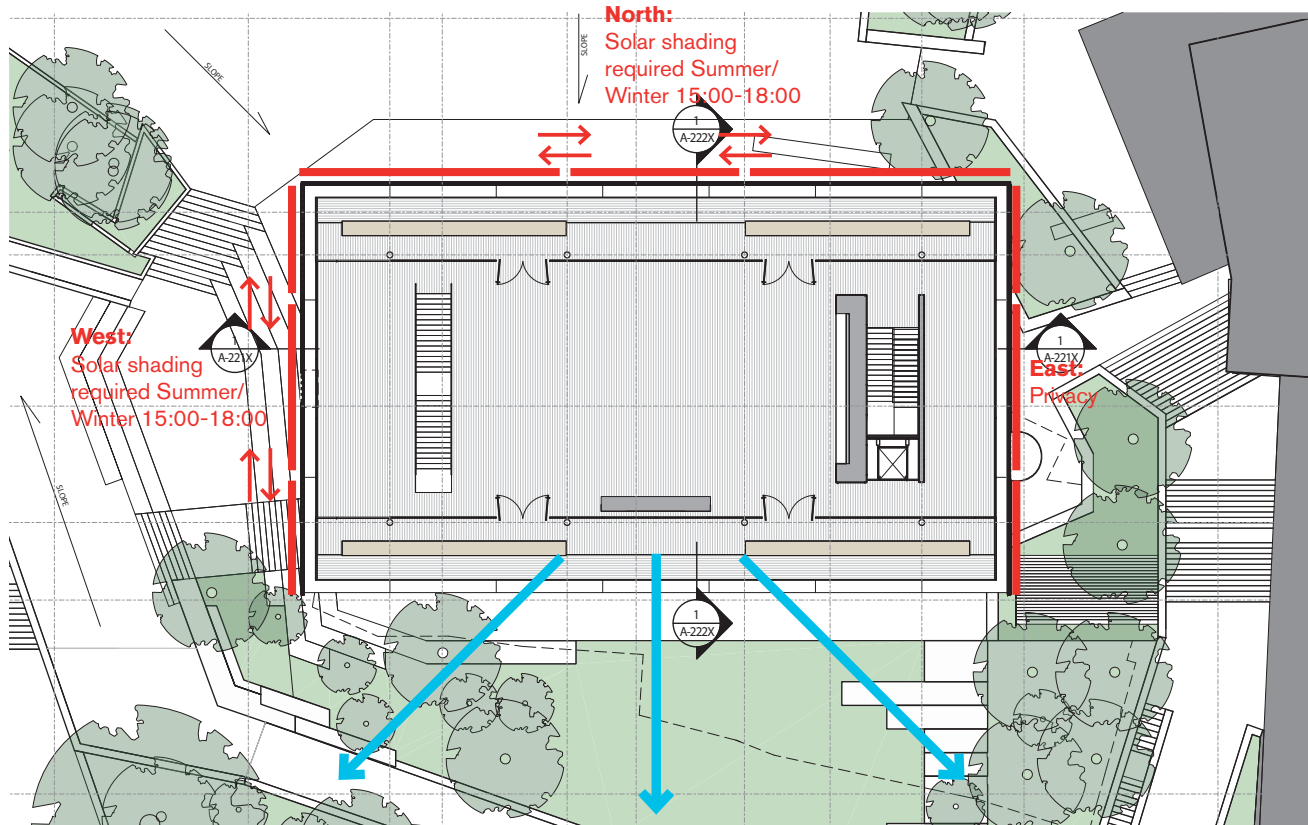
Level 2:
Dynamic element, allowing an optimal response to seasonal variation in wind direction and sun position whilst maintaining visual connectivity across the Square.



Source: AUS_VIC.Melbourne.948680_RMY.epw



North, East and West Façade - Shading



North Façade

The use of shading screens on this façade can allow a natural fresh air flow while maintaining comfort. The Façade screens will slide to open in order to maximize building transparency and interaction with the plaza.

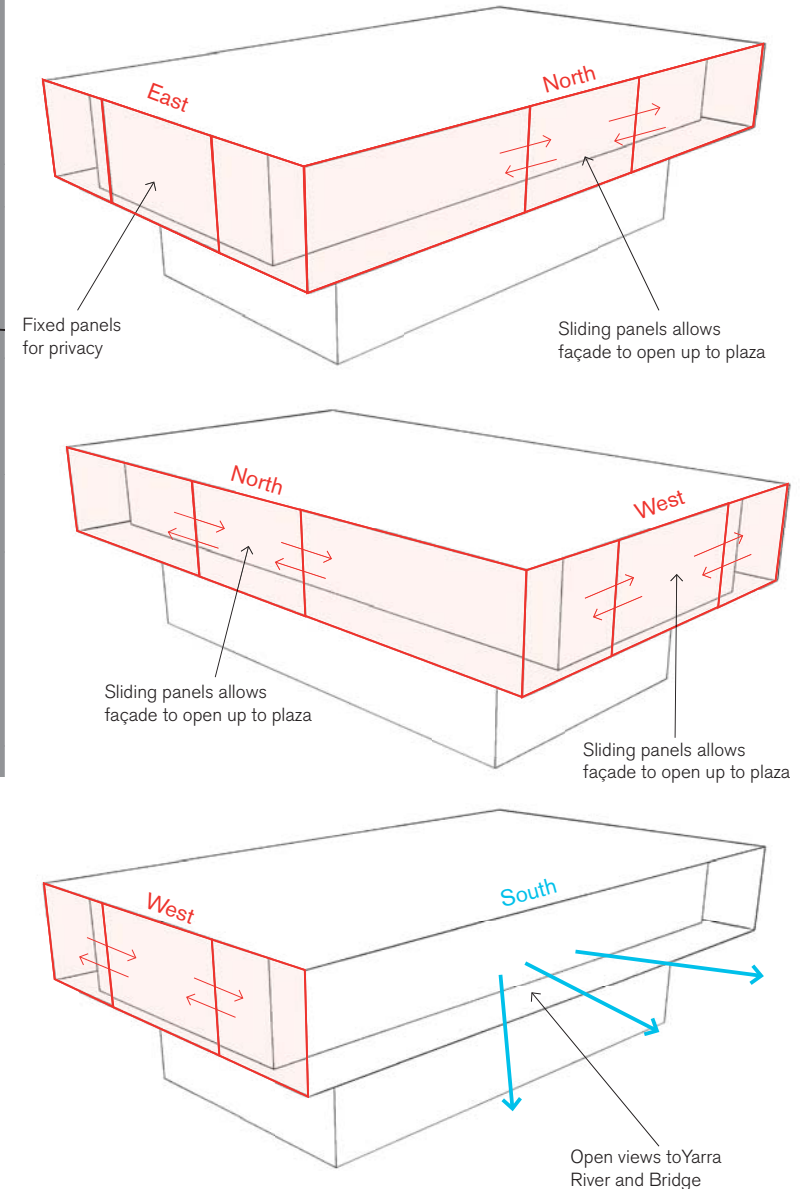
West Façade

Use of shading will protect the building from afternoon sun. The Façade screens will slide to open in order to maximize building transparency and interaction with the plaza.

East Façade

The Façade screens will be fixed for privacy.

High level proposed strategy



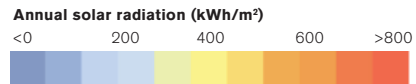
Shading Screens

Sustainability and Energy Usage

Annual shading performance assessments have been completed for each façade orientation to inform the shading design.

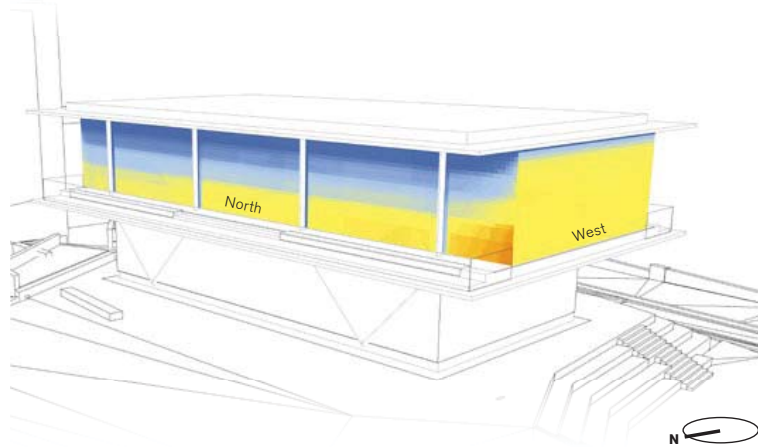
The shading design intent is to reduce the annual energy consumption and greenhouse gas emissions associated with heating and cooling of the building, which is consistent with the intent of energy usage reduction in Section J.

There is potential for the North and West facade shading to include a dynamic element, allowing an optimal response to seasonal variation and sun position whilst maintaining visual connectivity across the Square.



North Façade

- A significant proportion of annual cooling energy can be reduced by soffit overhang and shading protecting from high angled sun.
- During winter heating can be offset through solar access of the lower angle sun.
- The use of shading screens on this façade can allow a natural fresh air flow while maintaining comfort.



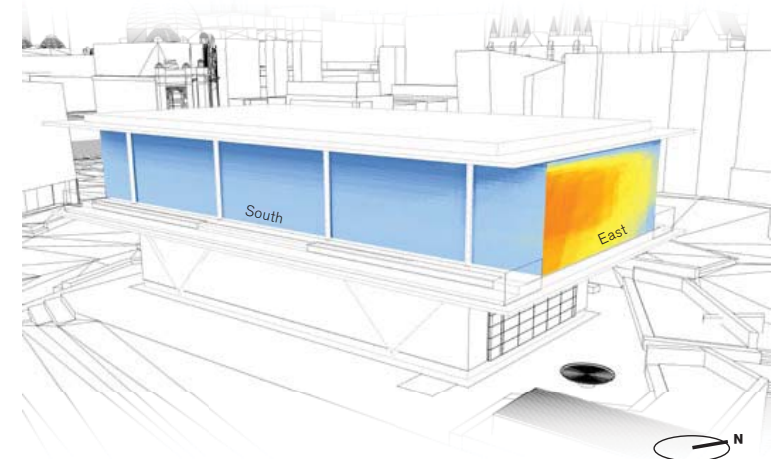
West Façade

- The use of shading will protect the building from afternoon sun.



South Façade

- Solar gains through the south façade are insignificant.
- Shading is not required for energy reduction.



East Façade

- Adjacent buildings offer protection from early morning sun.
- Shading from high angled sun is expected to improve comfort and reduce cooling energy during the late morning.



Note: Analysis showing radiation on facade, without shading screens | Weather data: AUS_VIC.Melbourne.948680_RMY.epw

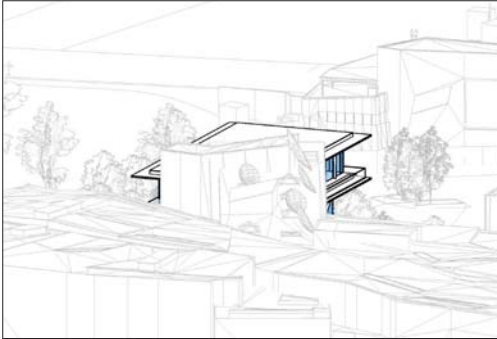
Environmental Study

Views from the Sun

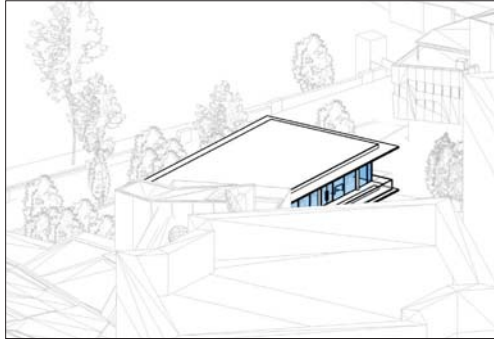
Winter Solstice

21st June

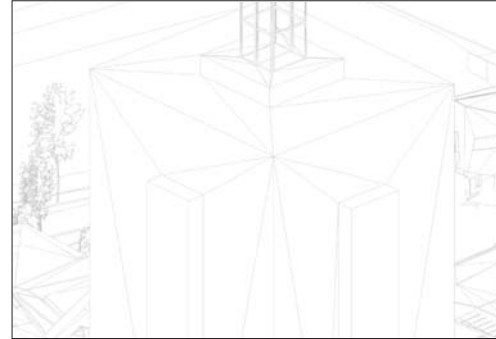
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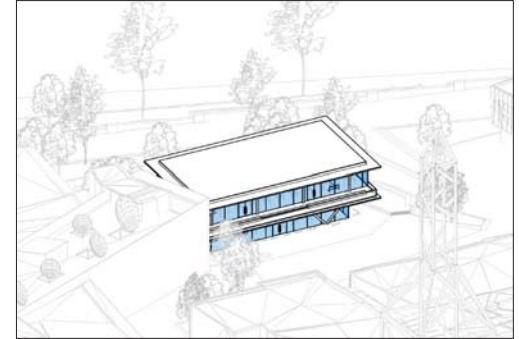
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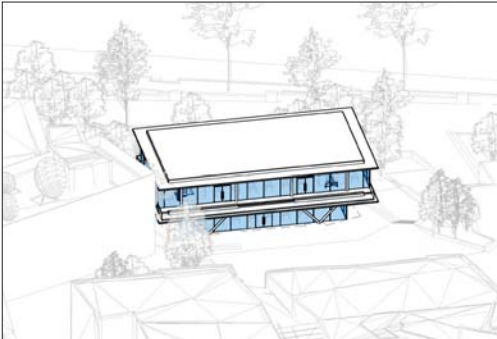
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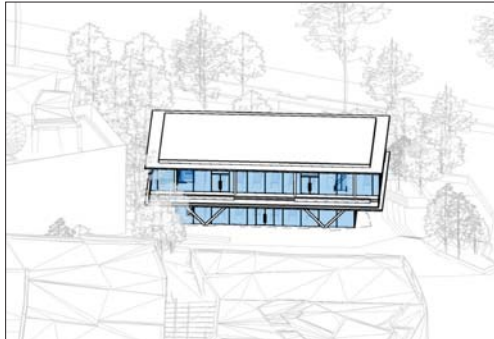
12:00



13:00



14:00



15:00



16:00



- Solar access on small parts of the east facade between 12:00 and 13:00.
- Solar access on the north facade between 09:00 and 10:00, and between 12:00 and 16:00.
- Solar access on the west facade from 15:00 and 16:00.

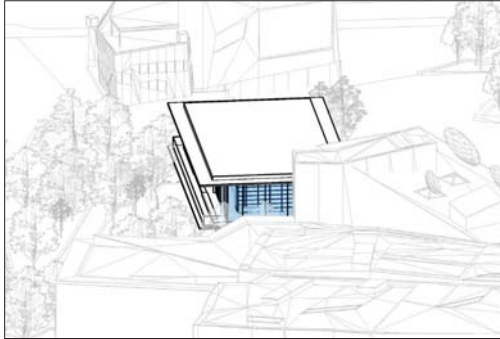
Note:

Solar angles below 10° have been excluded.
Daylight savings for Melbourne are taken into account.
Views from the sun shown without shading screens.

Equinox

21st March

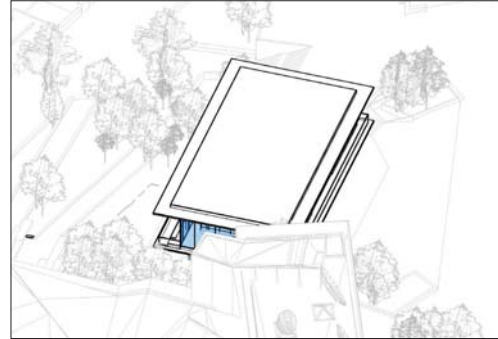
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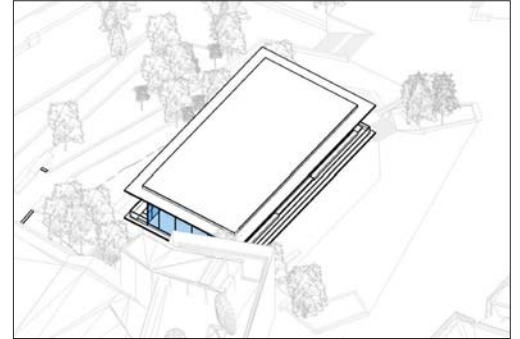
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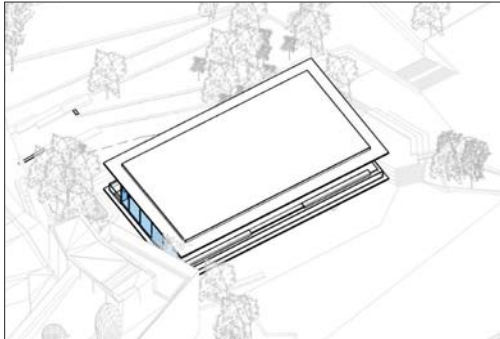
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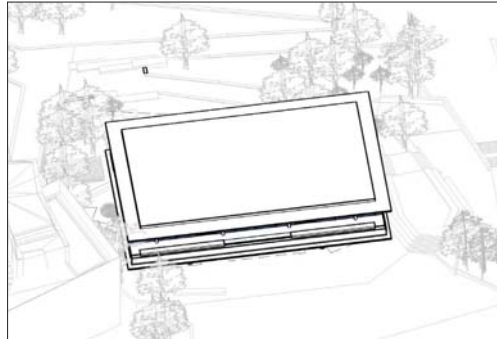
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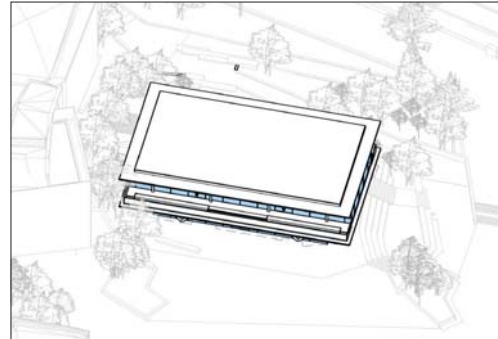
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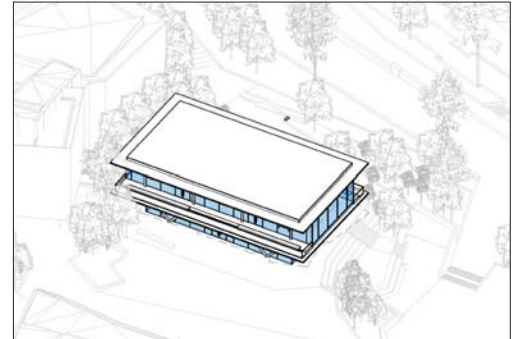
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14:00



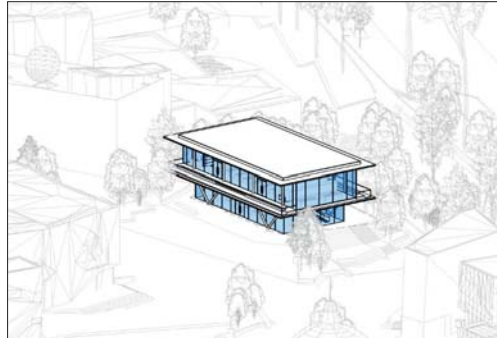
15:00



16:00



17:00



- Solar access on the east facade between 08:00 and 12:00.
- Solar access on the north facade between 13:00 and 17:00.
- Solar access on the west facade between 14:00 and 17:00.

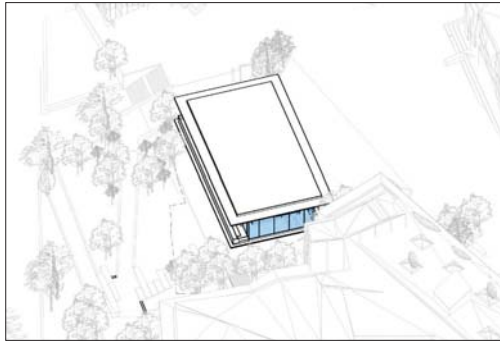
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Views from the sun shown without shading screens.

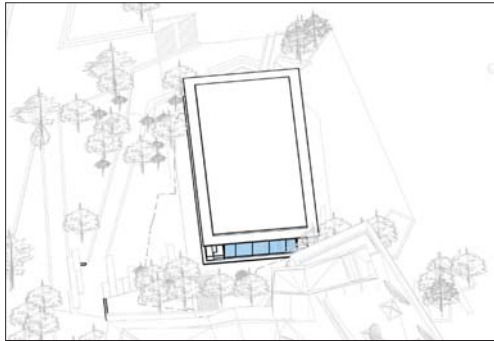
Summer Solstice

21st December

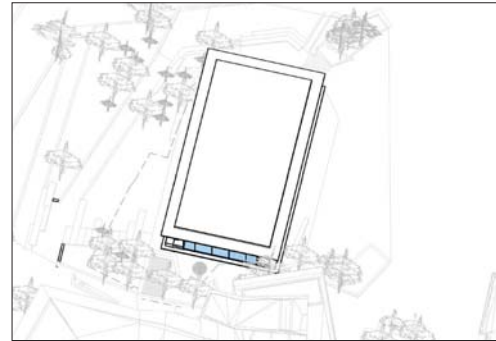
09:00



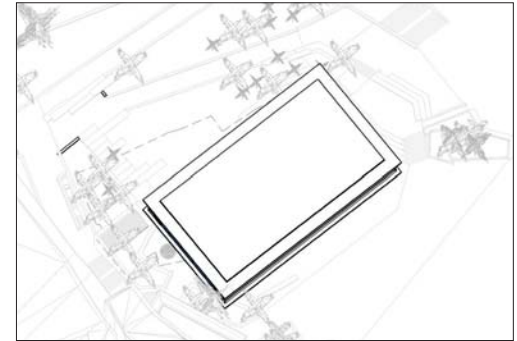
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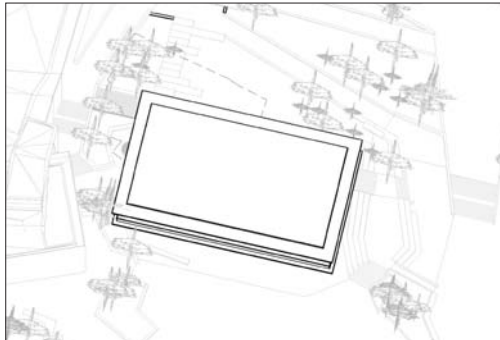
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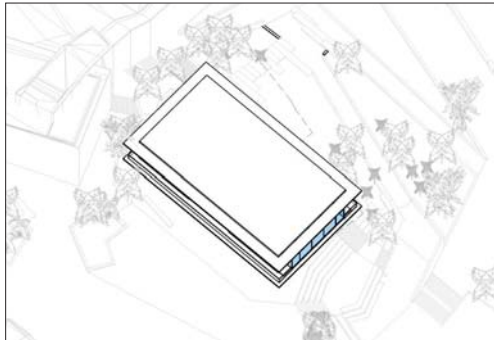
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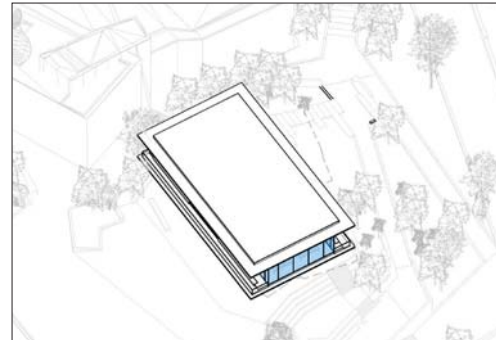
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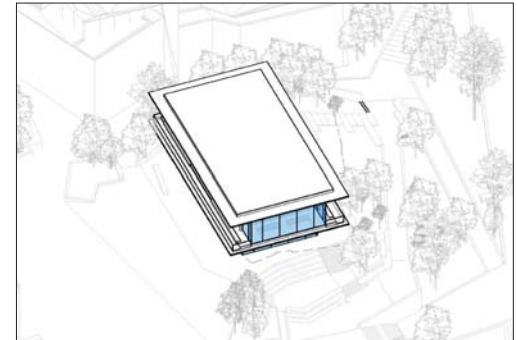
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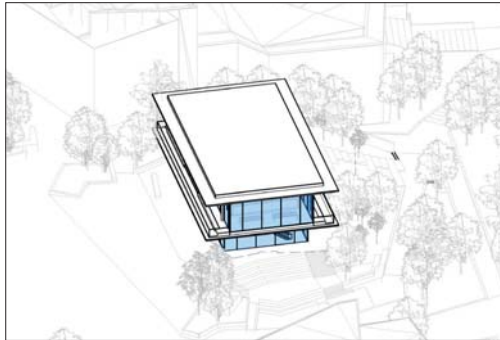
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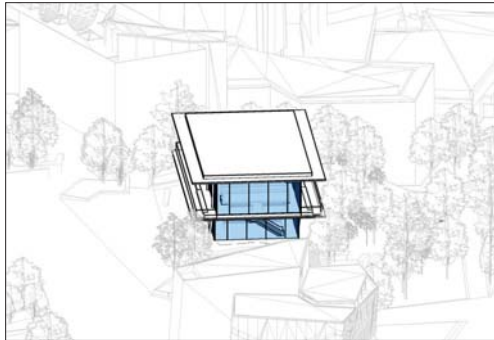
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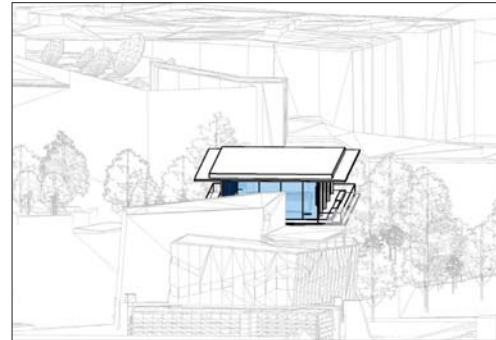
17:00



18:00



19:00



- Solar access on the east facade between 09:00 and 13:00.
- Solar access on small parts of the north facade between 15:00 and 19:00.
- Solar access on the west facade between 15:00 and 19:00.

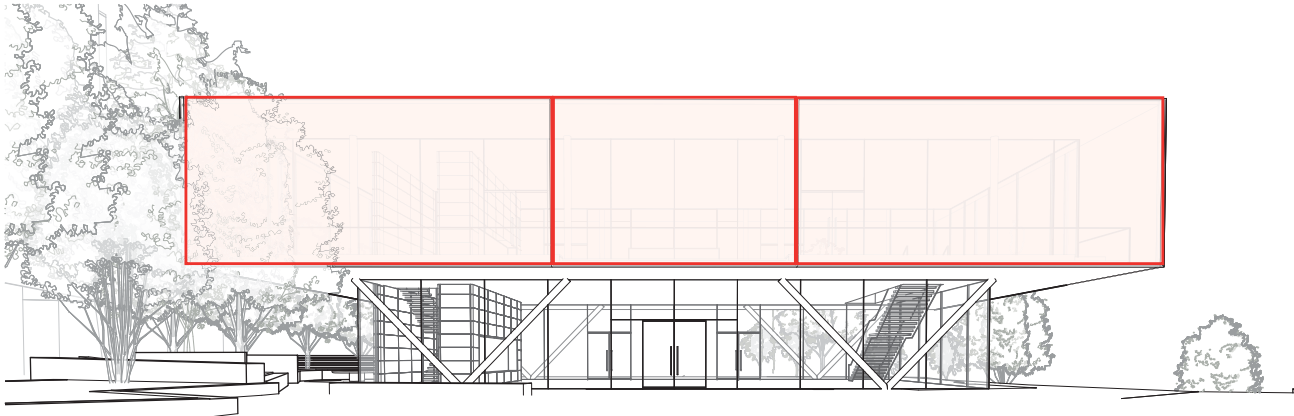
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Views from the sun shown without shading screens.

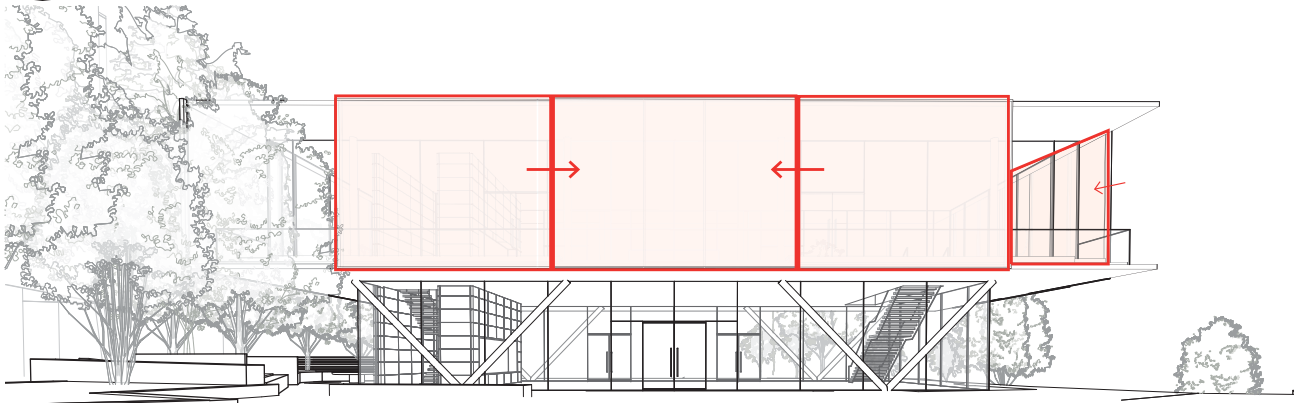
North Façade configuration

Sliding façade possible configuration - Centred

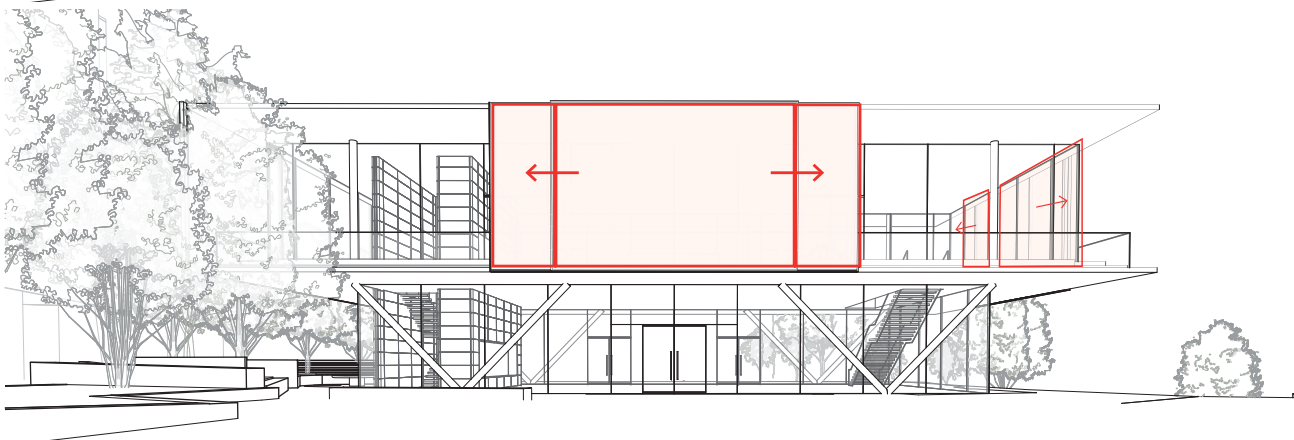
- Operability and screen arrangement to develop further during the design stages.



Fully Closed



Centred partial opening

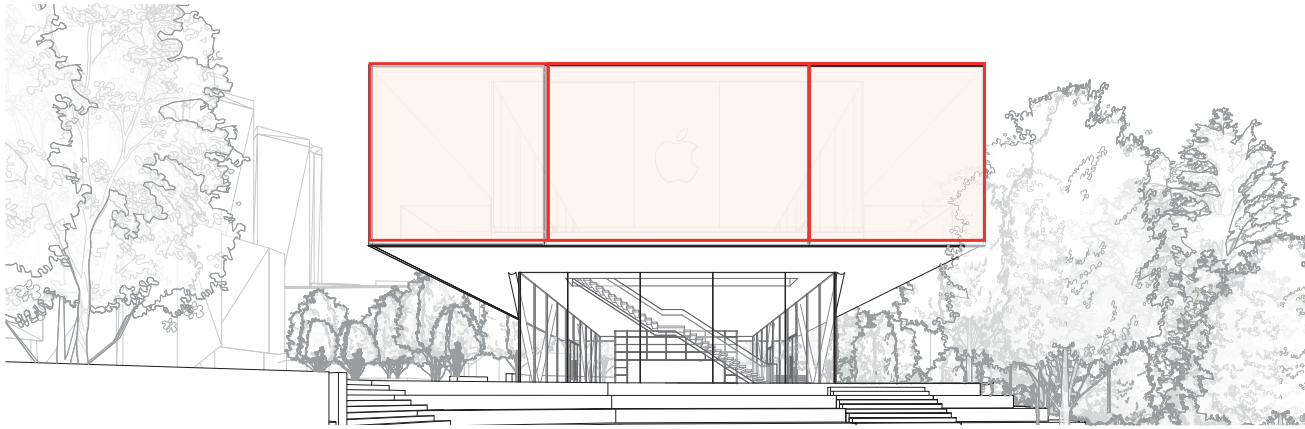


Centred full opening

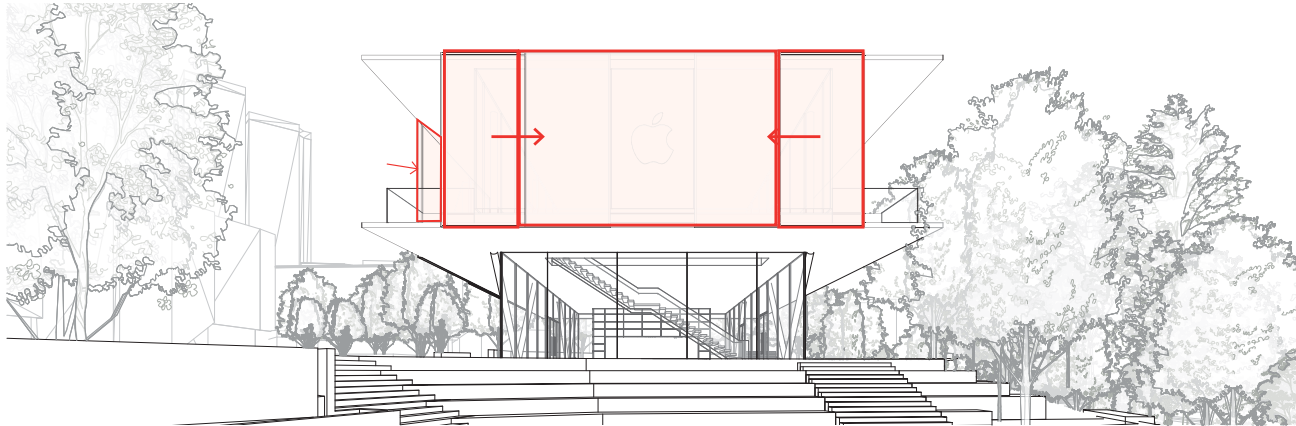
West Façade configuration

Sliding façade possible configuration - Centred

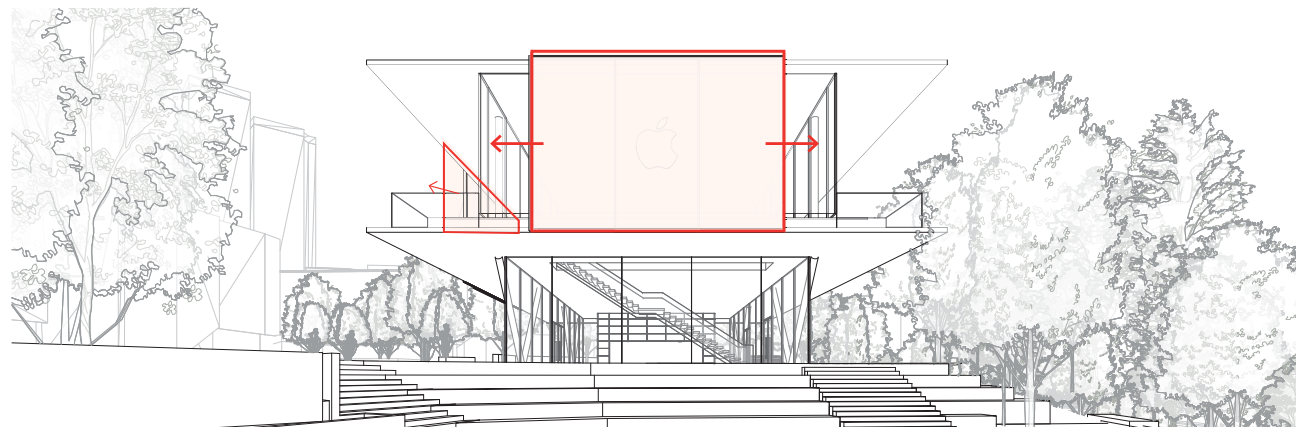
- Operability and screen arrangement to develop further during the design stages.



Fully Closed



Centred partial opening



Centred full opening

Shading Screens operability
North and West Façade Closed.

- Operability and screen arrangement to develop further during the design stages.

