THE HIVE -SOUTH SPINE LEARNING HUB

SINGAPORE NANYANG TECHNOLOGY UNIVERSITY

INTRODUCTION

According to MS1525, the configuration of the building was considered as one of the passive design strategies. The geometry of NTU Learning Hub is designed to incorporate passive environmental features such as the provision of self-shading, natural light and good window-to-wall ratio (for tutorial rooms).

ANALYSIS 2 :Geometry of the Buidling

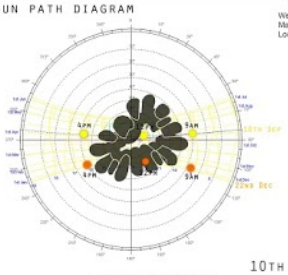
Without overhangs.

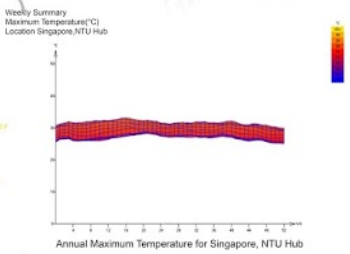
With overhangs.

The shape of the building itself: the overhangs allow self-shading and keep the sun and rain out.

ANALYSIS 1 :Building and Site Context

Sun path diagram





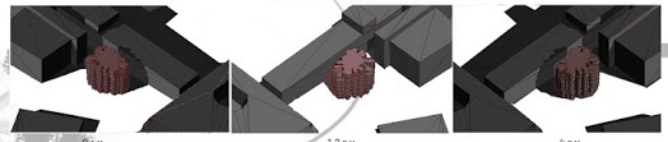
10th September

9am
Exposed facade: North-east
Sun shaded facade:
North-east (by existing buildings), West (by its geometry)

12pm
Exposed facade: North-west
Sun shaded facade:
North-west (by existing buildings), East (by its geometry)

4pm
Exposed facade: South-west
Sun shaded facade:
North-east (by its geometry)

22th December

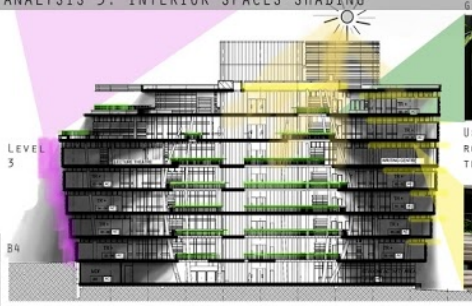


9am
Exposed facade: South-east
Sun shaded facade:
North-west (by its geometry)

12pm
Exposed facade: From above
Sun shaded facade:
Lower floors (by its geometry)

4pm
Exposed facade: South-east
Sun shaded facade:
North-west (by its geometry)

ANALYSIS 3: INTERIOR SPACES SHADING

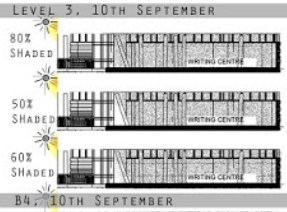


Greenery

Use of internal vertical greening and roof top greenery to further reduce the ETTV.

Stripped Windows
The concrete wall is with the 300mm thick of stripped windows.it has a good ratio between them and able to decrease the direct sunlight.

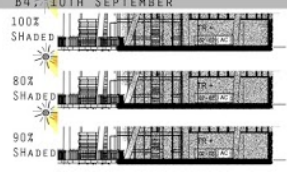
Level 3, 10th September



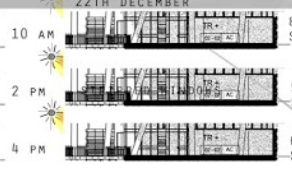
22th December

The self-shading effect (at North side) is more effective on September when the sun is more towards the North side (N80°E at 10am, W3°N at 2pm and W5°N at 4pm).

B4, 10th September



22th December



The effect is more obvious at lower floor (B4) compare with the upper level 3. This is because the lower floors have been shaded by more overhangs from upper floors.