

2009國際太陽能建築設計競賽 - 技術專項獎作品

2009 International Solar Building Design Competition - Prize for Technical Excellence Works

Solar Architecture

Sunshine Primary School in Sichuan

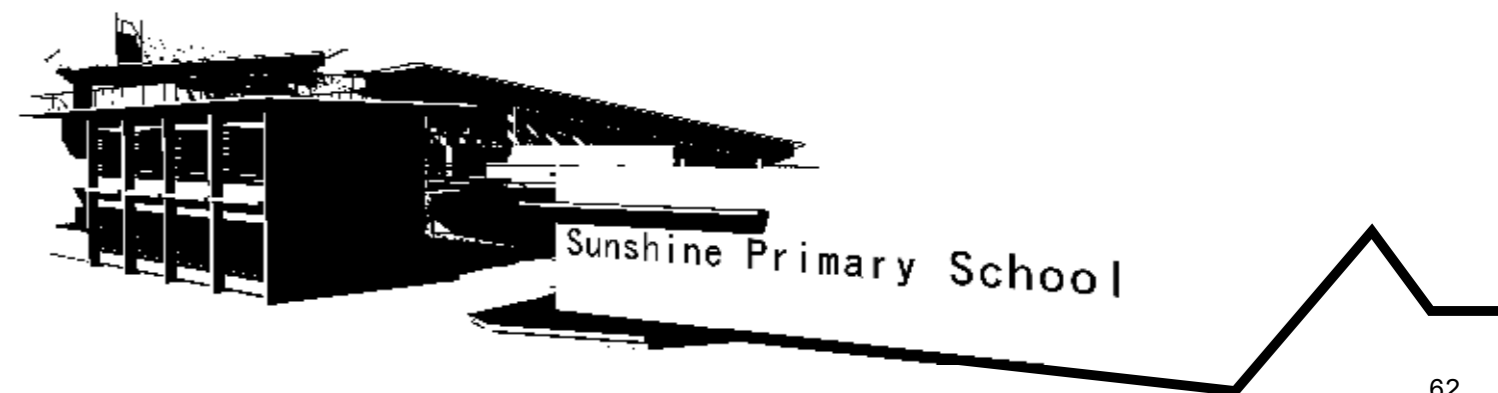
Advisor : Kuo Ying-Chao

2008 Fall



永續的校園

由於震災後的地區需要大量的小學重建，主要設計概念為建立一個能與社會與環境互動的小學建築，透過互動使大量小學的建設、維持更為容易，避免過於快速的建設而無法永續維持。



CONCEPT AND STRATEGY

• 基地位置：綿陽

• 永續的校園

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• 陽光小學=太陽能發電廠+社區公園

透過與官方電力單位的合作，共同建立大量的太陽能板於小學中，發電供給校園使用，多餘電力由電力單位回收。如此可降低小學造價，並供農村學童更好的學習及住宿的環境。

社區公園的設立則能增加學童與社區的互動，並供給社區新的活動空間。

• Site : Mian-Yang

• Sustainable primary school

Because of the earthquake disaster, many areas need the massive reconstruction of primary school. Mainly designs concept is to establish the school construction system that can be interacted with the society and environment. It makes the construction and maintenance could be easier by the interaction, and avoid the fast construction being unable to maintain.

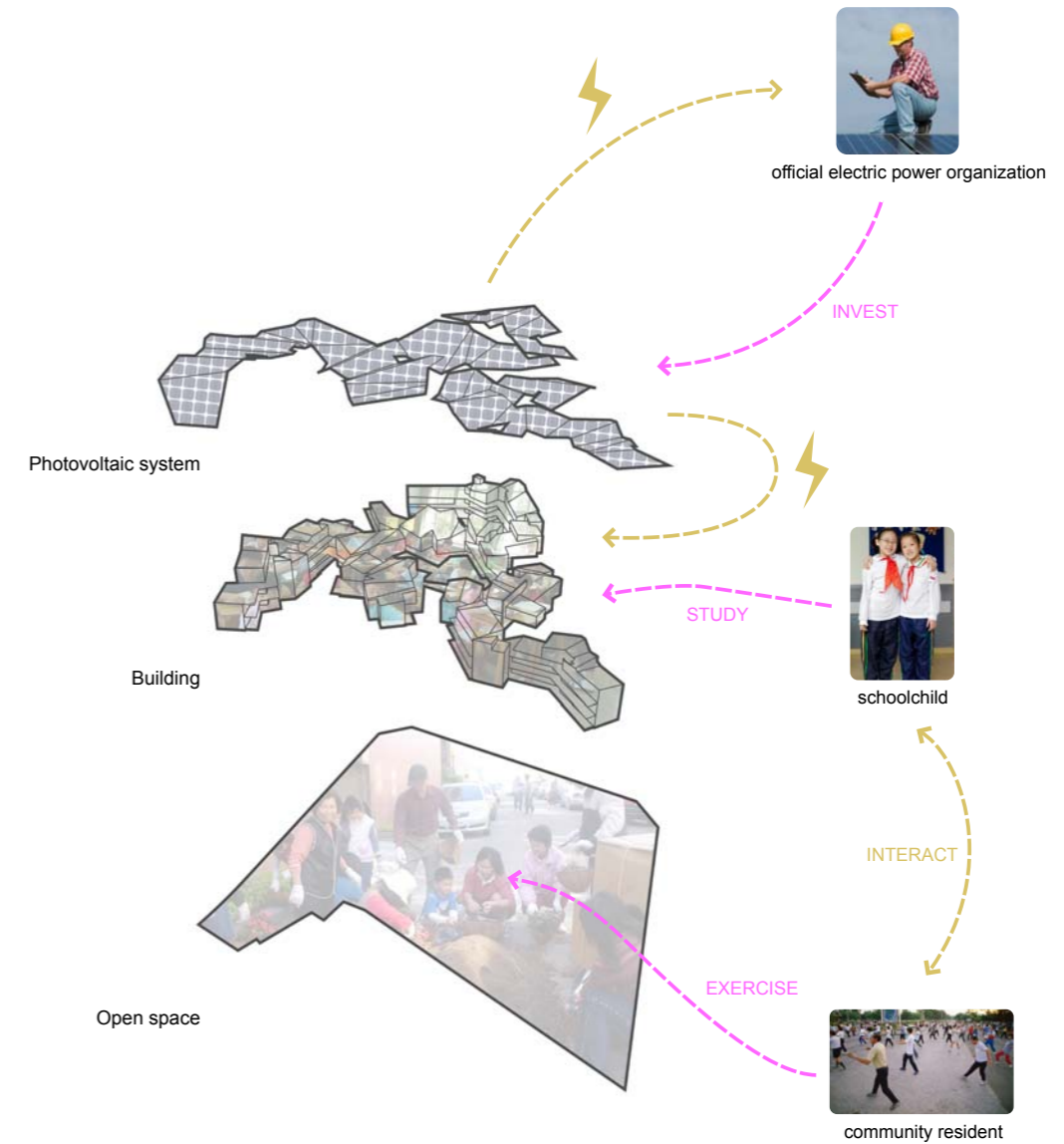
• Sunshine primary school = Solar power plant + Communal park

Though the cooperation with the official electric power organization, establishes the massive photovoltaic system in the primary school, the electricity generation supplies campus use, the surplus electric power recycles by the electric power organization. So it may reduce the cost of school construction, and supplies the schoolchild from countryside a better environment to study and lodge.

The communal park can increase the interaction between schoolchild and community, and supplies the community new activity space.

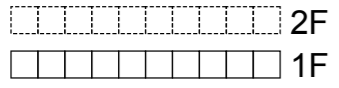


Sunshine primary school = Solar power plant + Communal park

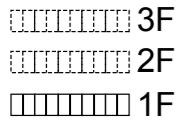


Design process

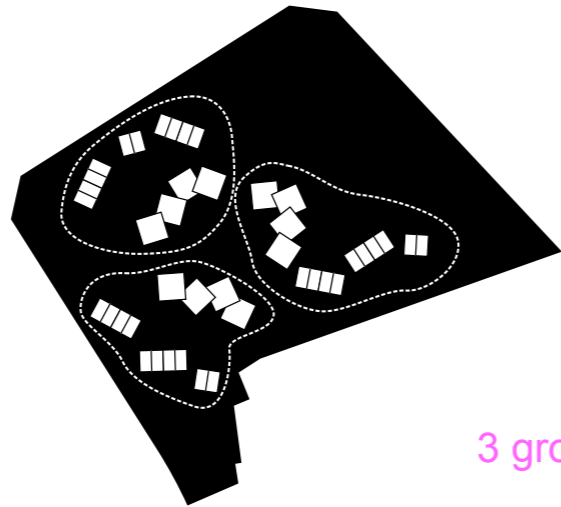
classroom



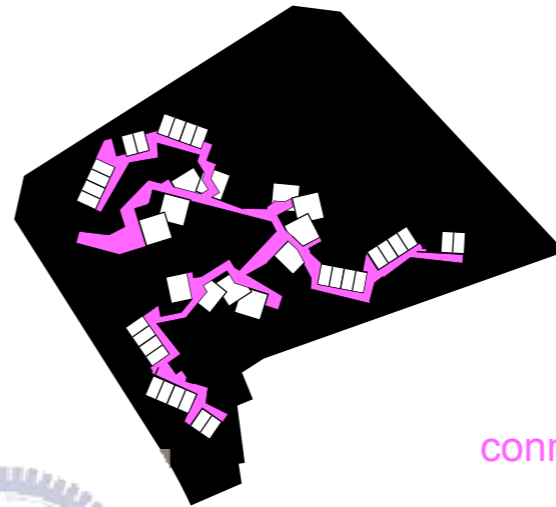
domitory



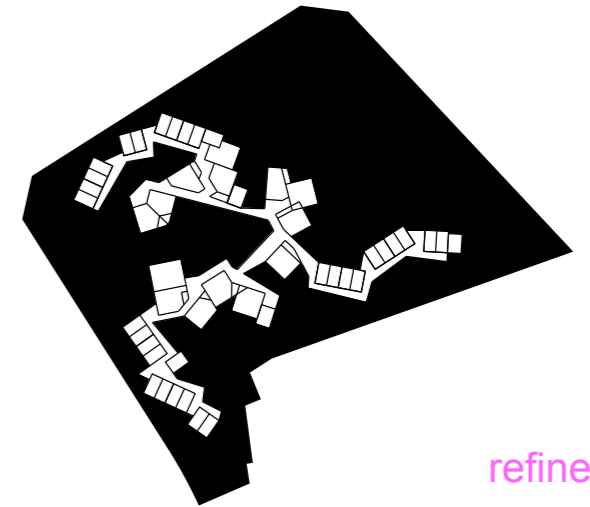
mass



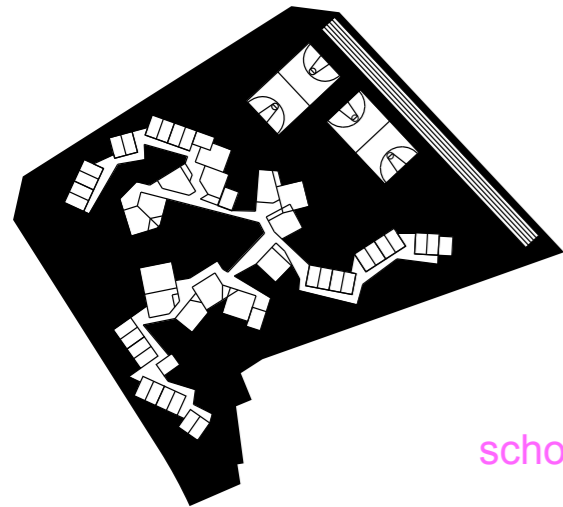
3 groups



connect



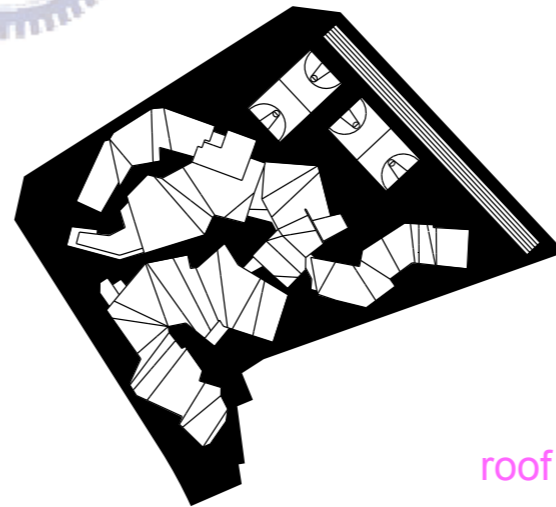
refine



schoolyard



administrative space



roof



SITE PLAN

In order to make the most effective electricity generate, the roofs are covered with BIPV. The area of BIPV about 5020m², almost 30% of the site.



GROUND FLOOR PLAN



2nd FLOOR PLAN

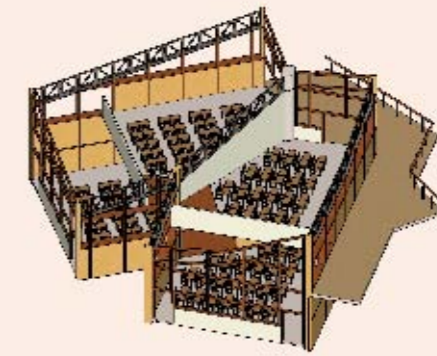
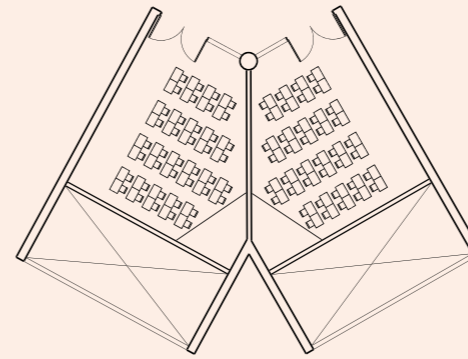
- ▲ MAIN ENTRANCE
- COMMON CLASSROOM
- PARTICULAR COURSE CLASSROOM
 - 01 music classroom
 - 02 natural science classroom
 - 03 computer classroom
 - 04 painting classroom
 - 05 reading room for students
 - 06 book storehouse
 - 07 multi-purpose classroom
 - 08 labor skill room
- ADMINISTRATIVE ROOM
 - 09 administration office
 - 10 teacher office
 - 11 duty room
 - 12 storage for general affairs
 - 13 health care room
 - 14 association office
- HOSTEL FOR STAFFS
- DORMITORY
- CANTEEN
- 15 BIKE PARKING
- 16 SCHOOLYARD



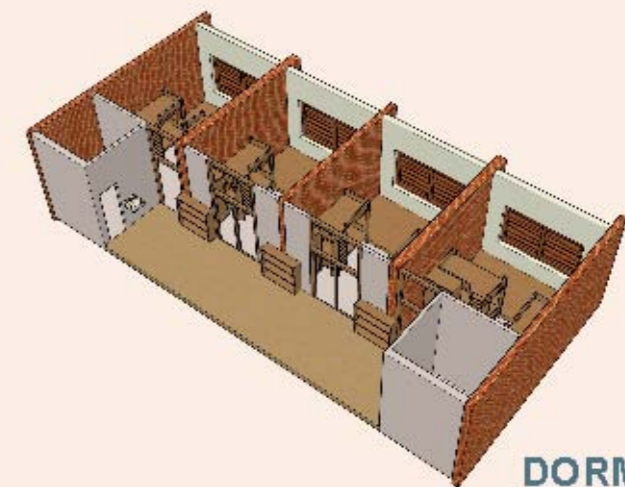
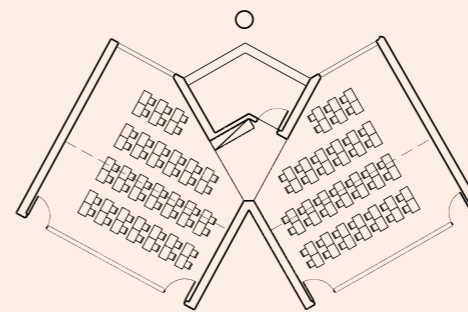
3rd FLOOR PLAN



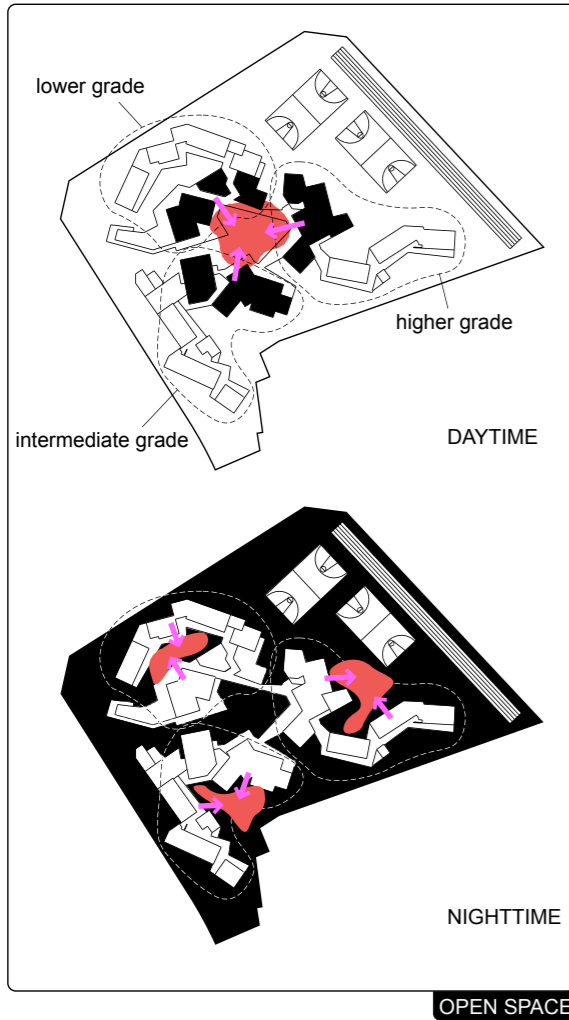
UNIT



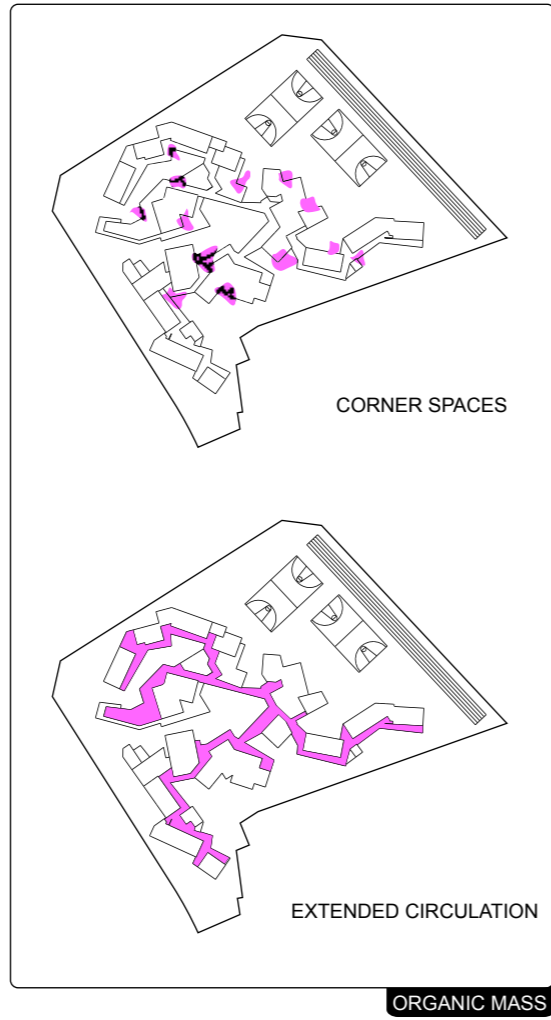
CLASSROOM UNIT



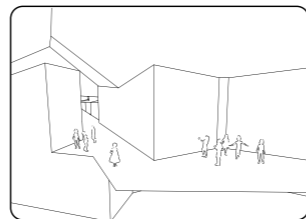
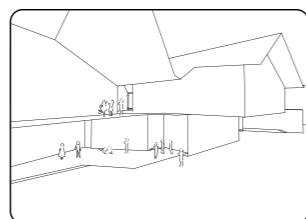
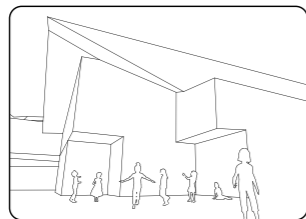
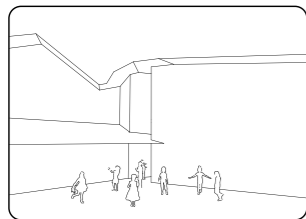
DORMITORY UNIT



The buildings are divided into 3 groups according to the age of students. Each group has its own open space, and the 3 groups are connected by deck on 2nd floor.



The organic disposition brings many corner spaces and extended circulation. It makes activities occur in the small spaces.

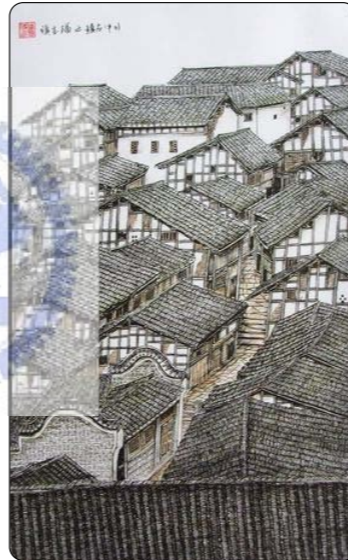


corner spaces

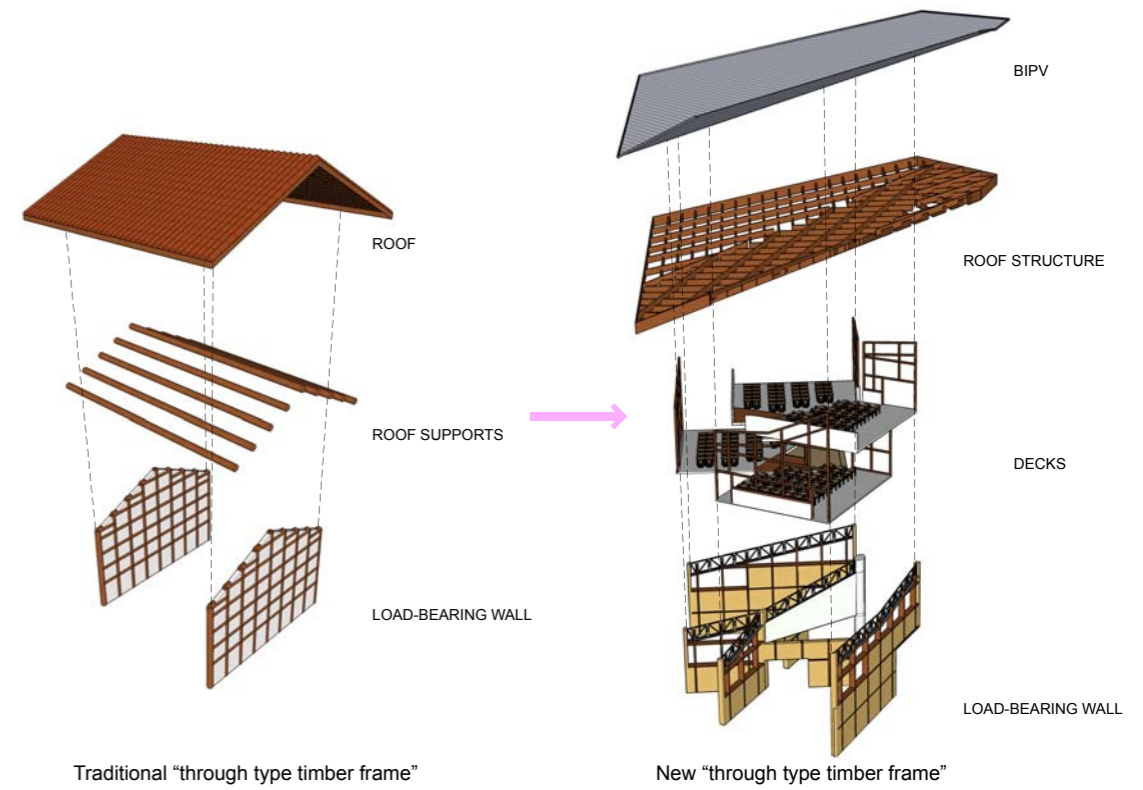
TRADITION AND TECHNOLOGY



The "through type timber frame (chuandou framing system)" is a kind of structure type of Sichuan traditional houses. This kind of structure support the house by load-bearing wall which construct by combined pillars.



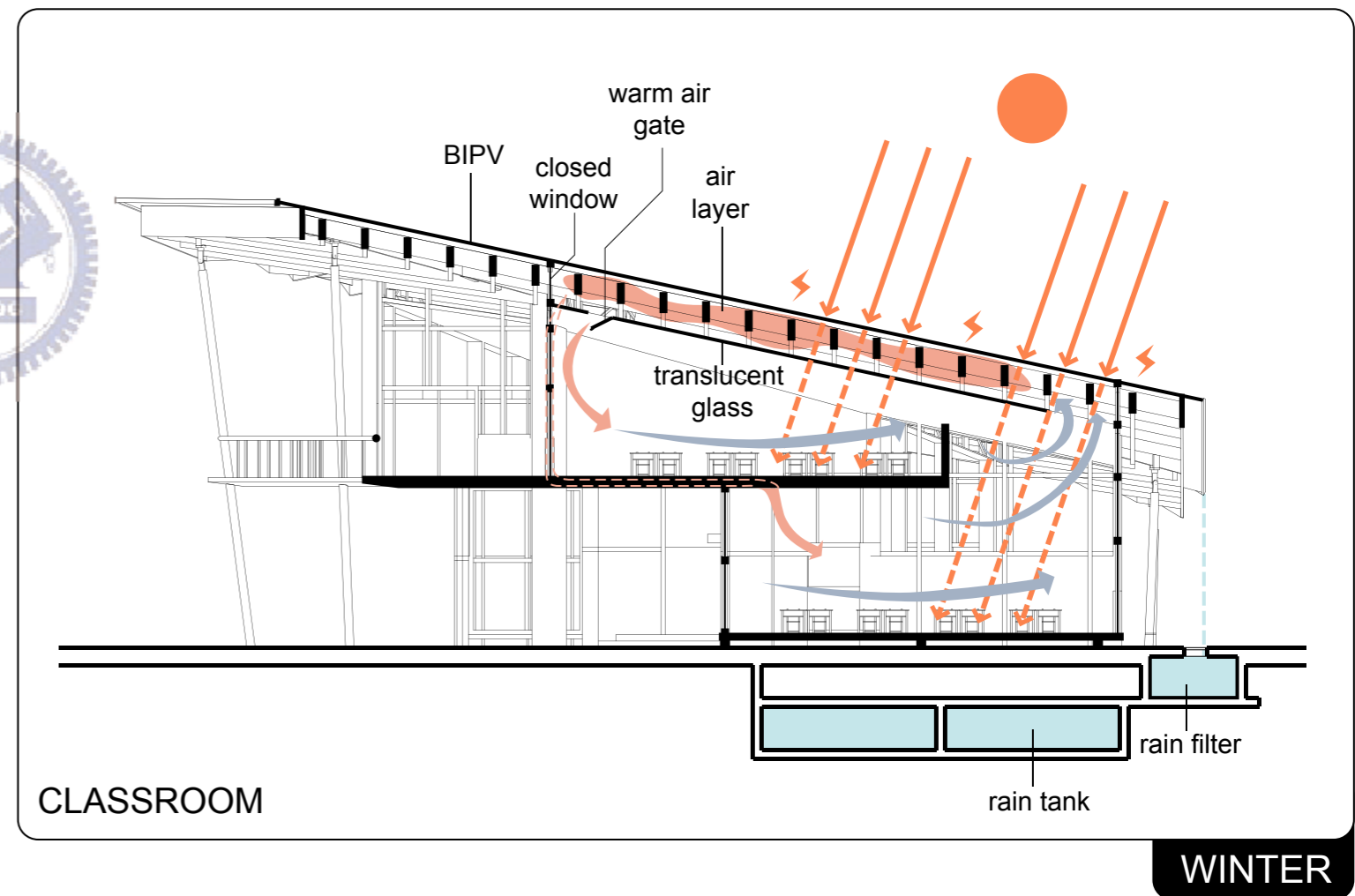
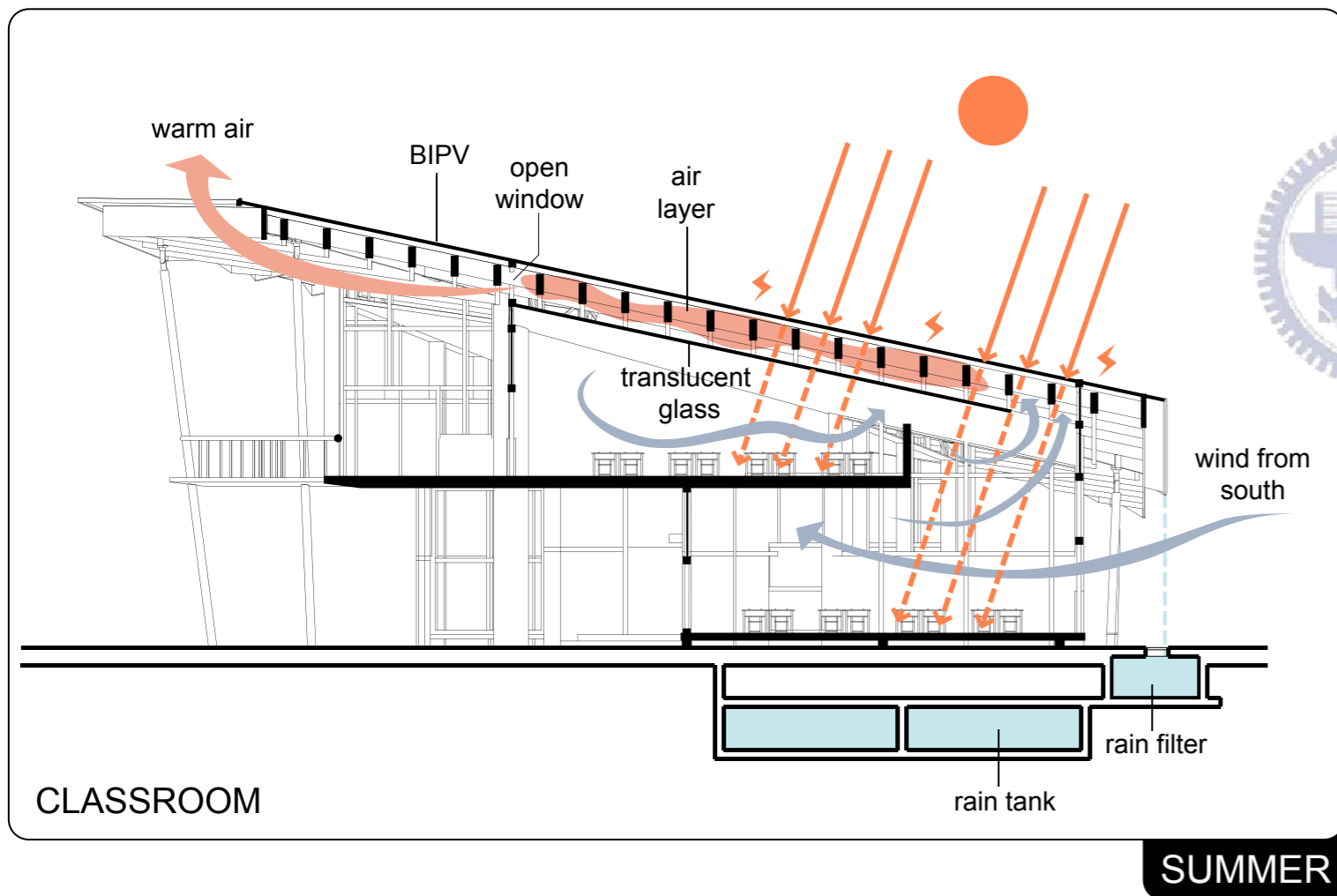
The building in this case transfer this kind of structure into new structure form.



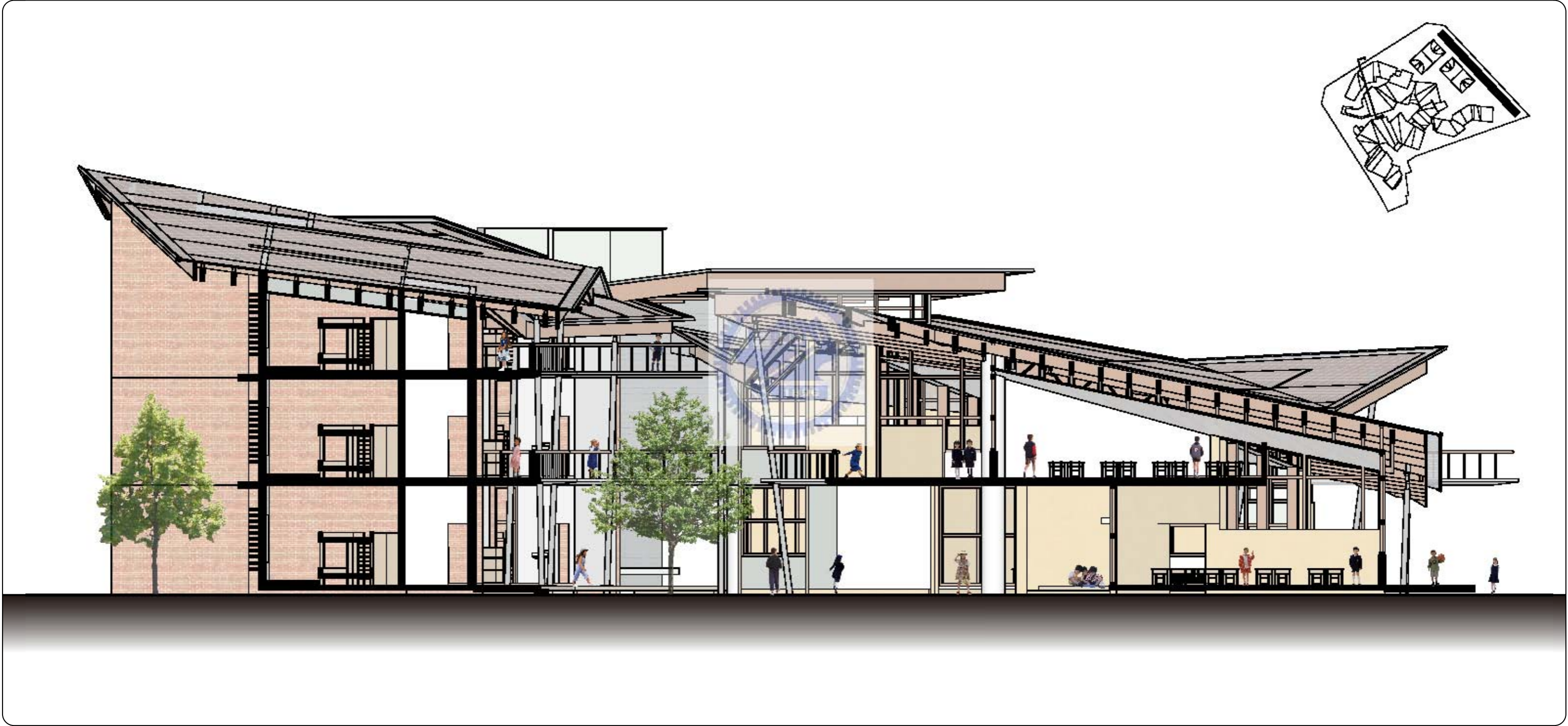
Traditional "through type timber frame"

New "through type timber frame"

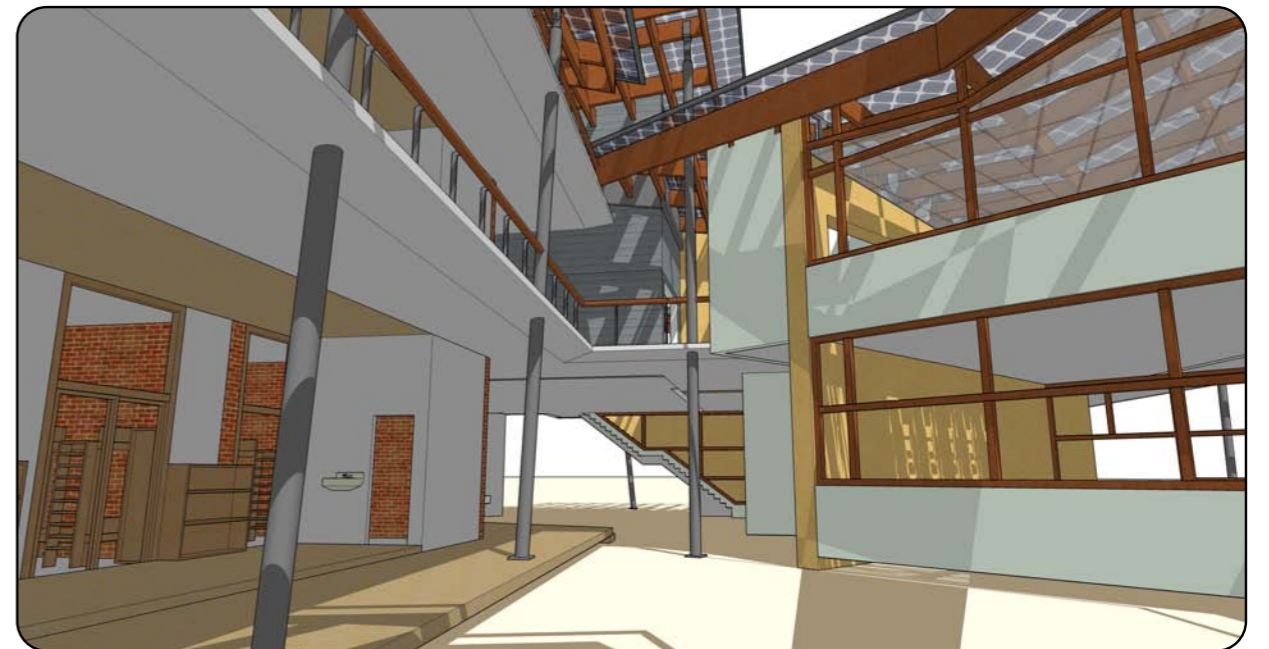
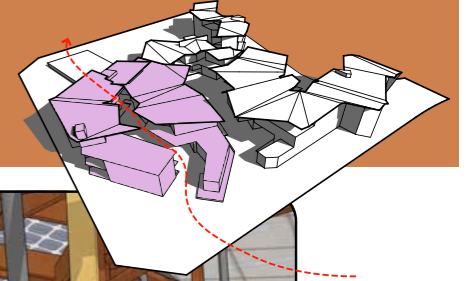
SOLAR TECHNOLOGY DOUBLE ROOF



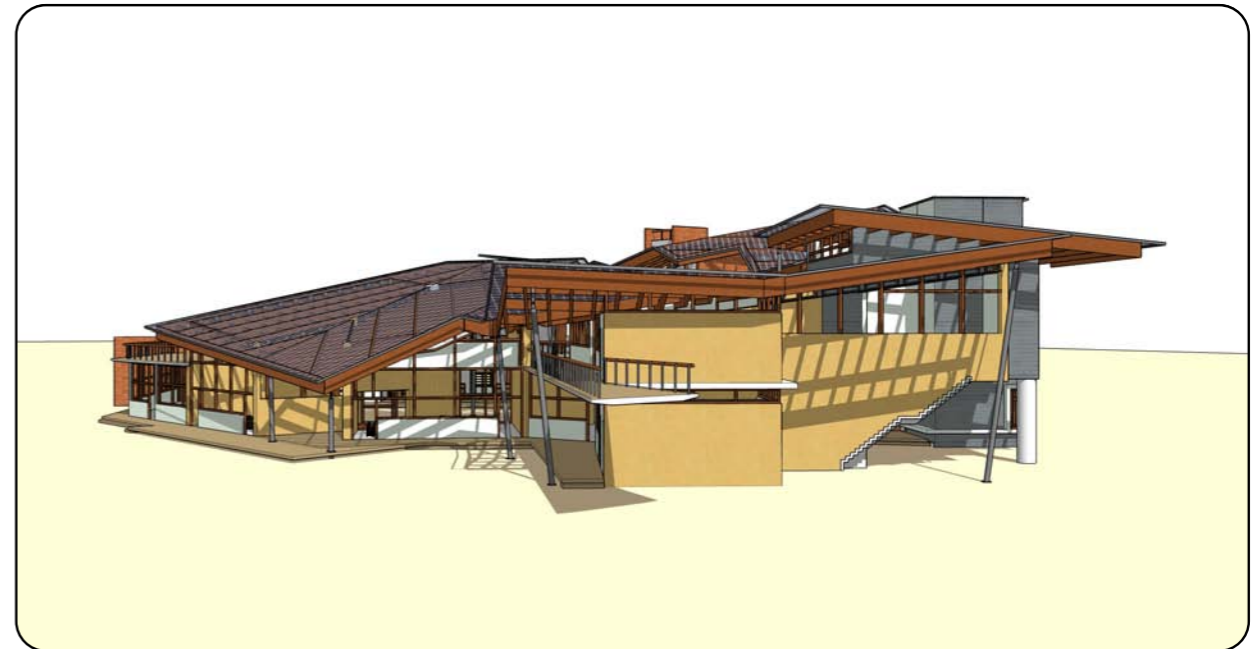
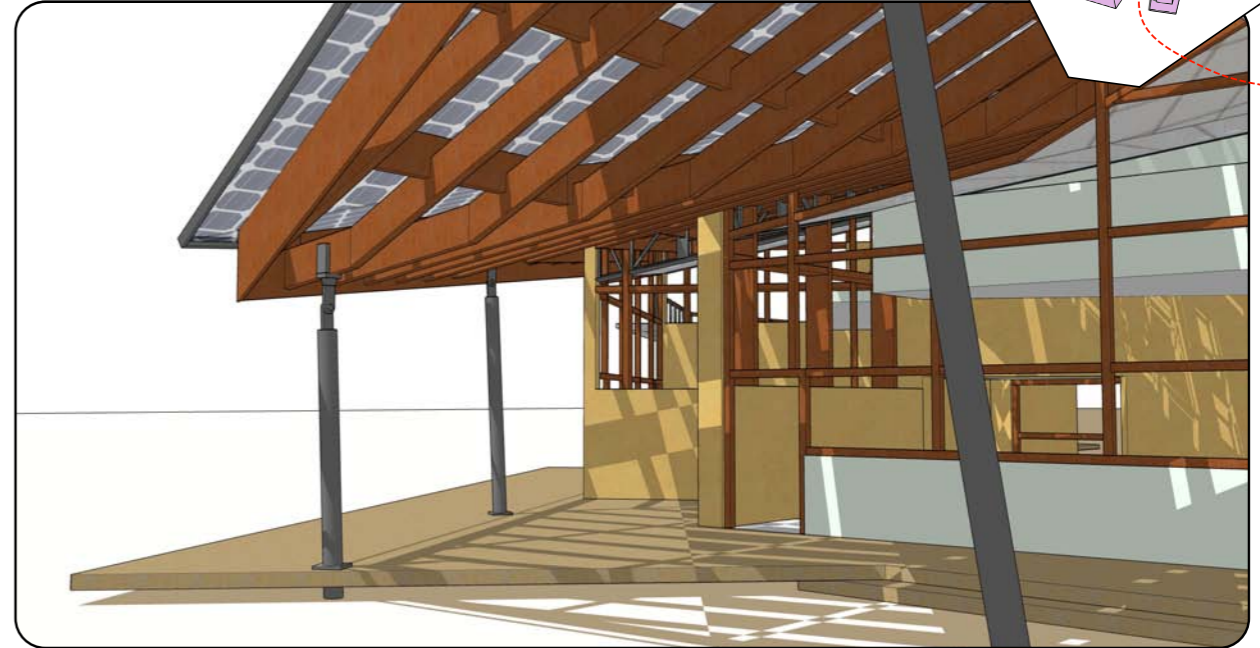
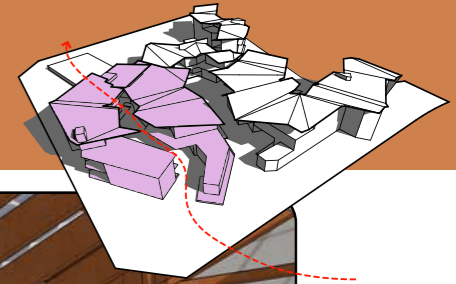
SECTION



PERSPECTIVE



PERSPECTIVE



PERSPECTIVE

