





# **SYNONYMOUS ARCHITECTURE**

Space analysis of Switch, Stretch & System

Graduate Institute of Architecture, NCTU

# 質。建築

建築空間的轉換、延伸及系統上的整合應用

國立交通大學建築研究所

建築的本質在於空間之間的轉換、延伸及系統上的整合應用。由2D平面轉換成3D立體空間，將不同特質的機能延伸出新的單元，塑造新的系統進而創造出新的建築思維。一樣的性質在不一樣的手法操作下會表現出完全不同以往的建築概念；質能生量，細部即可看出整個建築的本質，質的輕重足以傳達每個概念的隱喻及想法。每個步驟的執行及合理的轉換最終都是為了呈現出真正的本質，如何讓空間的深度在置入了大量的想法及新的系統後卻不變調是一項極大的課題，是設計的議題也是建築設計最大的挑戰。自體的循環代謝也是保有本質的作法，系統中的系統在進行漸變的過程中創造了無數的建築新意義，建築本質也終於不再只是用文字便能夠訴說，用各式各樣的平面圖像表現及三度空間感受的傳達都是為了淋漓盡致表達建築設計的最深層意念。





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Space analysis of Switch, Stretch & System

Graduate Institute of Architecture, NCTU

This is a "S Dissertation" about Synonymous Architecture with space analysis of switch, stretch & system.

## **Synonymous\_**

meaning the same or nearly the same.

## **Switch\_**

the act of changing one thing or position for another.

## **Stretch\_**

the act of physically reaching or thrusting out.

## **System\_**

an organized structure for arranging or classifying.

Quality of architecture is the process of switch, stretch, and systematic integration and application between spaces. From 2D plans to 3D spaces, stretching a new unit and system from functions with distinguishing characteristics, a new architectural thinking is therefore created. Different articulation can display a whole new architectural concept even with the same character. Quality can produce quantity, details can reveal the quality of an architecture, and quality itself can convey the metaphor of every concept. Practice of each step and reasonable transformation are all for the representation of quality. How to make the concept comes into line from the beginning to the end after inputting a large number of thoughts and new systems is difficult task and challenge. Self circulation is also the method to remain quality. System in systems creates a lot of new meanings of architecture in the process of changing. Quality of architecture finally cannot be told just by words; various plans, images, and 3D spaces presentation are more important tools to express deepest thought of architectural design.

Abstract





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## 2007

2007 Sep.- 2008 Jan. Core studio 1, Adviser: Ian Shao  
2007 Nov. Workshop, Adviser: Antonino Saggio

## 2008

2008 Feb.- Apr. Core studio 2-1, Adviser: Pea-Chian Lee  
2008 Mar. Workshop, Adviser: Toyo Ito  
2008 May.- Jun. Core studio 2-2, Adviser: Chiyi Chang  
2008 Jul.- Aug. Internship in TnCh Architects Urban Landscape Design Workshop  
2008 Sep.- 2009 Jan. Core studio 3 Adviser: David Tseng

## 2009

2009 Feb. Workshop, Adviser: Sheng-Yuan Huang  
2009 Feb.- Jun. optional studio 1, Adviser: Kuo-Chien Shen  
2009 Mar. Participation in 2009 NCTU Architecture Exhibition  
2009 Jul. Workshop, Adviser: MVRDV  
2009 Jul.- Aug. Internship in Le-Jing Chiang Architects  
2009 Aug. Excellent Work of Idea for Kaohsiung International Comprtition  
2009 Sep. Workshop, Adviser: Carlos Arnaiz  
2009 Sep.- 2010 Jan. optional studio 2, Adviser: Kyle Yang

## 2010

2010 Feb.- Jun. optional studio 3, Adviser: Shu-Chang Kung  
2010 Mar. Participation in 2010 NCTU Architecture Exhibition  
2010 Apr. Urban Design Workshop of GIA-NCTU & AA  
2010 Sep. - till now Internship in ARTECH ARCHITECTS



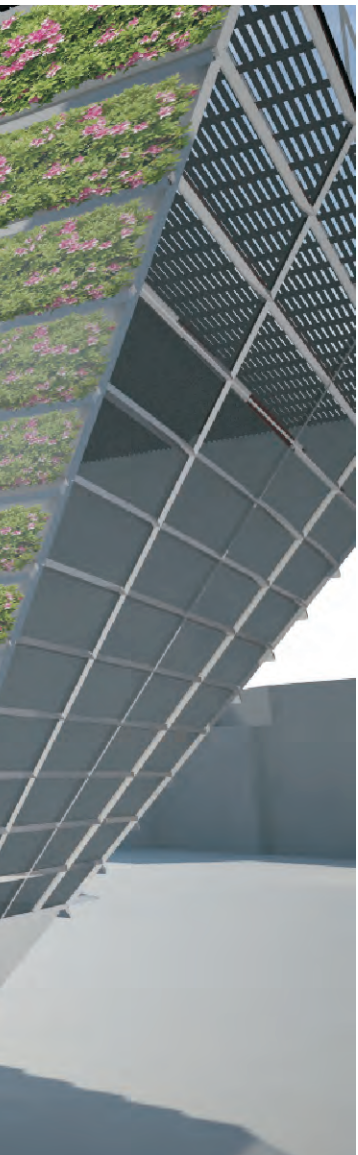




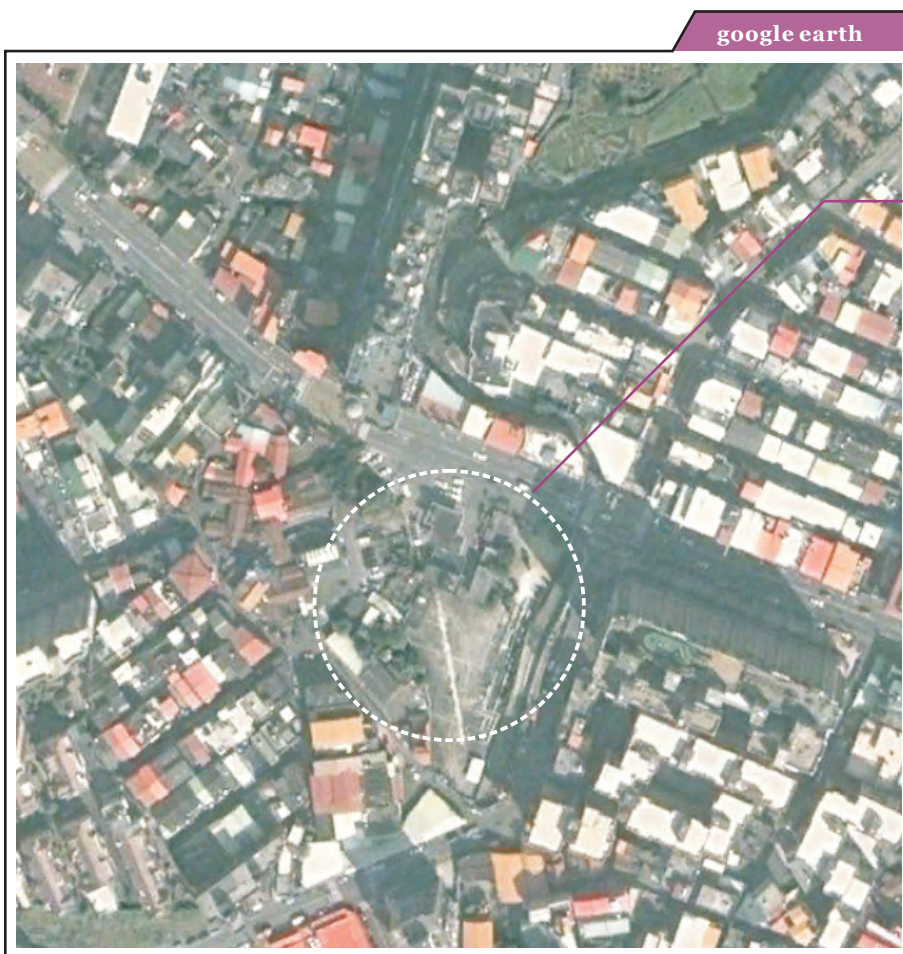
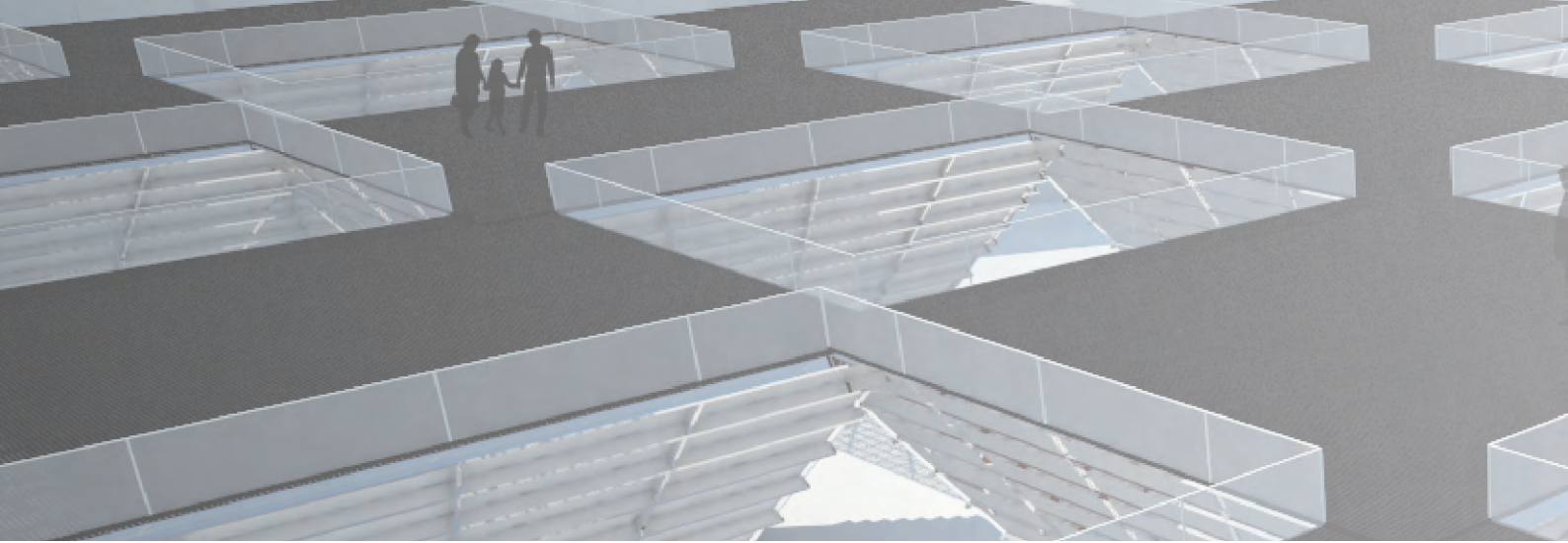
Portfolio 2007-2010 of Chun-Yen, Ku



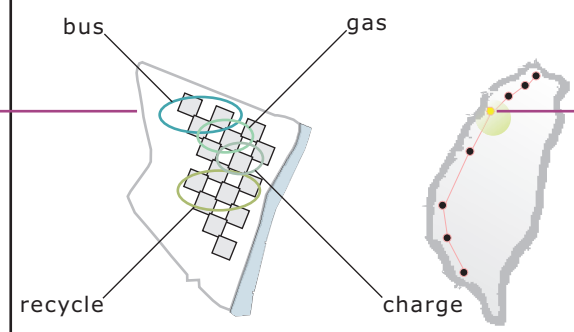






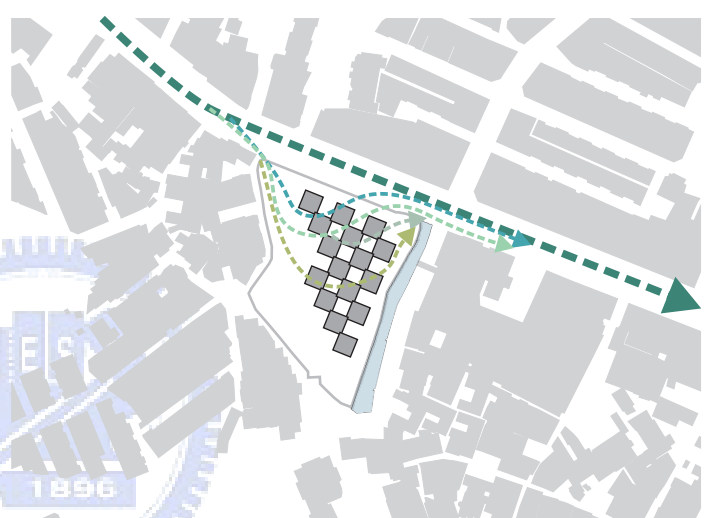


google earth



In Taiwan, urban garbage collection policy is "Keep Trash off the Ground". Actually it cause huge gasoline spent because of the garbage trucks.





If we can increase the added value of "taking out the trash" and reduce the cost of its required manpower and energy consuming, changing habits can save energy simultaneously.





**Power sources of the biogas power generation system**

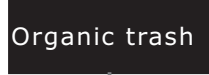
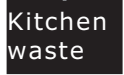
Waste plastic account large part in recycled garbage. It is also the materials to be decomposed for oil.

**Biogas power supply**

Biogas power generation system will supply the stations. So the stations can provide recharge service as well.

**Biogas power generation**

The energy from biogas in the station will provide recharge station and refridge systems, which save the production of the farms.

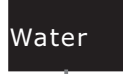
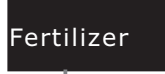
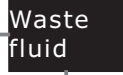
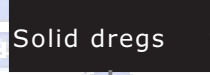
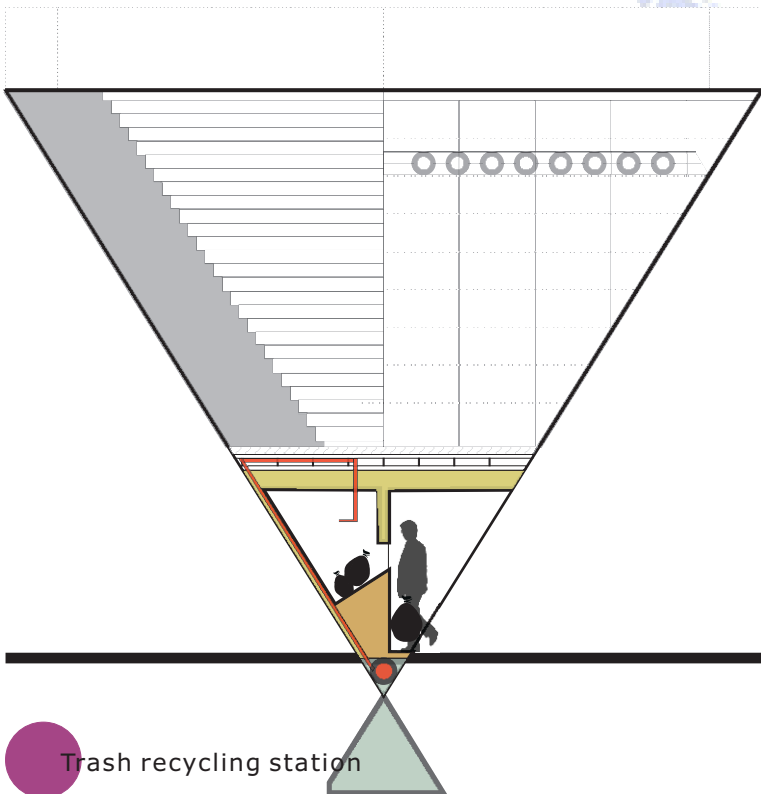



**Energy Saving for Garbage collection**


Setting the station as garbage collection site, the driving distance of the garbage truck can shorten and will avoid more pollution. People will rely on the station.


**Energy Sources and Conversions**

The kitchen waste recycling system will be built-in the station. Hence people will come every day and the station will be essential to our daily life. Recycling garbage will also be collected here.



Program 

Systems 

Foundation 

Resources 

Energy processes 

Generator

### Turning waste into compost

The farms are fertilized with biodegradable kitchen waste and adopted by people lived nearby. People will take the kitchen waste to the station then do farm in there.

### Low-pollution public transport

Using recharging vehicles as shuttle buses and all the stations will located next to the main roads (due to the property of gas stations), with high

ogas  
power  
eneration

Electrical energy

Power station

Electrical  
energy

### Required Conditions for site

To meet the conditions mentioned above and have high functional integrity, existing gas stations are the most appropriate candidate sites for design.

reezing  
ystem

Gas station

People  
Electric vehicle  
Garbage

its  
etables  
ermarket

Electric bus

Bus station



## Biogas power generation refrigeration system

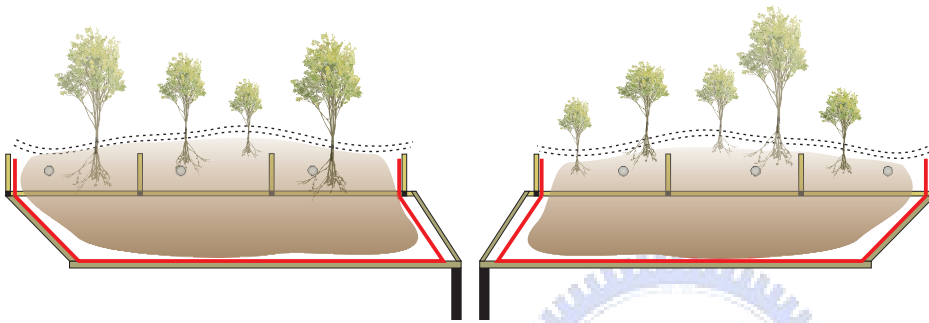
Fruits and vegetables refrigeration systems need uninterrupted power supply. Using biogas power here can achieve high economic efficiency.

## Tram

Let the tram stations become the life center. Then expanded to become transport nodes, not only waste collections but also public transportation stations.

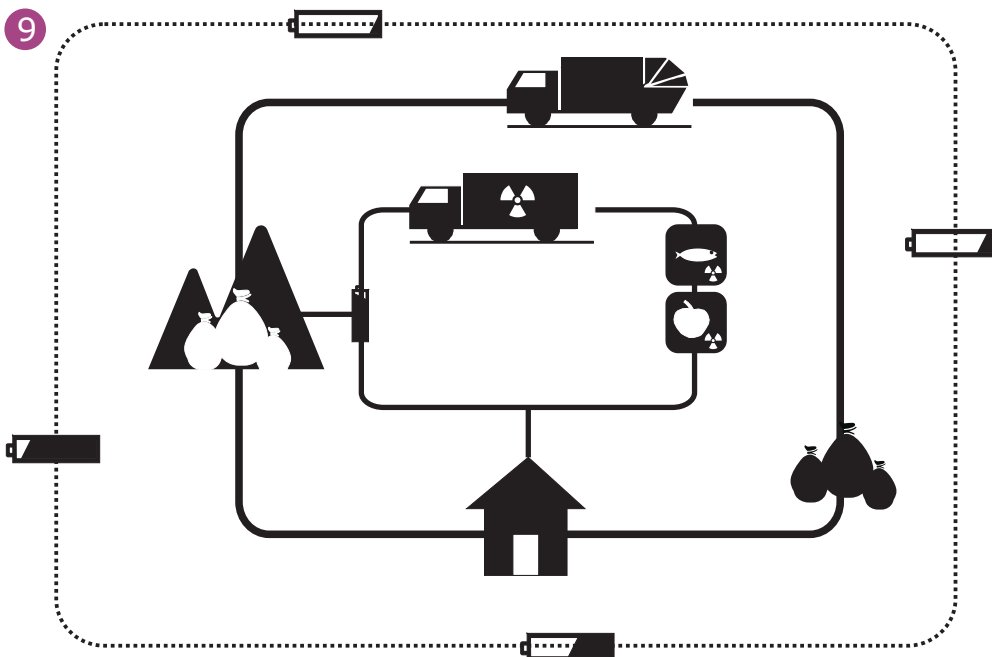
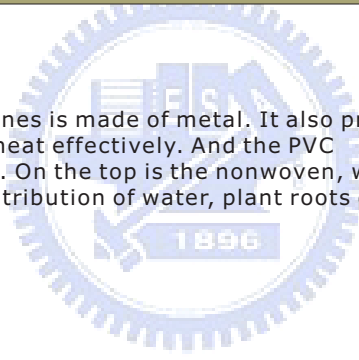
## Self-service Recharge Station

Biogas power generation provides the electric cars' power. The electric cars is going to be the global trend.



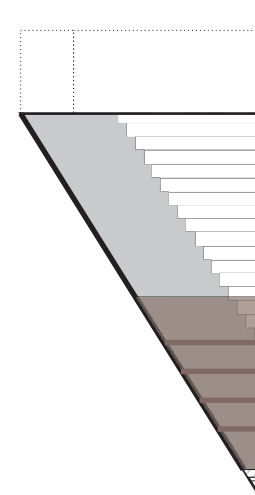
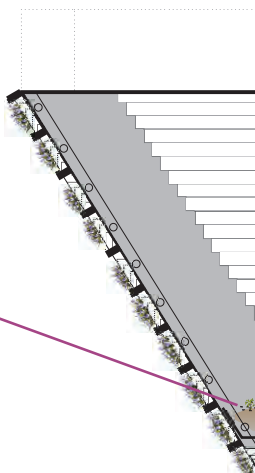
## Happy Farms

The frame with built-in water supply pipelines is made of metal. It also provides the air layer, which can isolate noise and heat effectively. And the PVC waterproof layer is fixed to the its bottom. On the top is the nonwoven, with high capillarity that allows the average distribution of water, plant roots can grow on but won't pass through it.



Fruits &

Fruits an



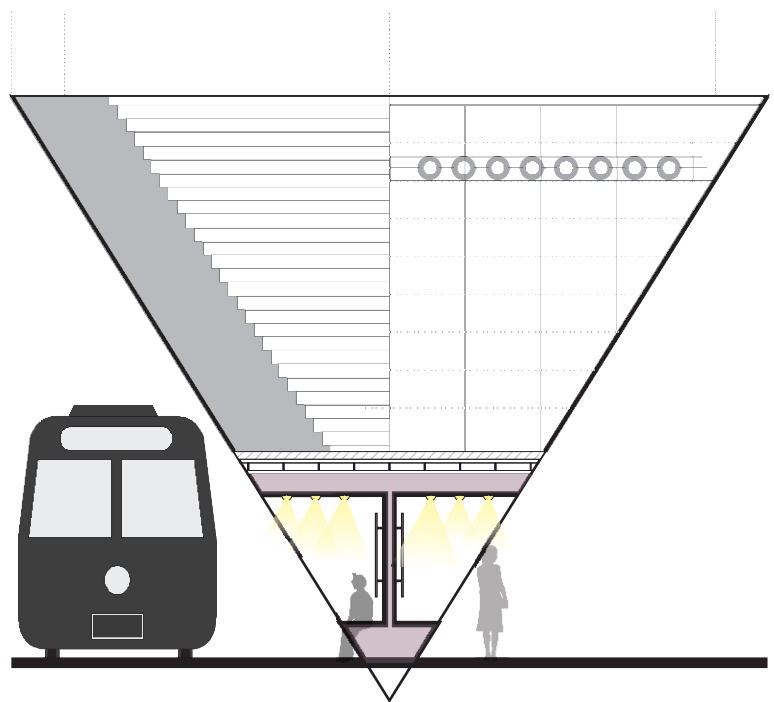
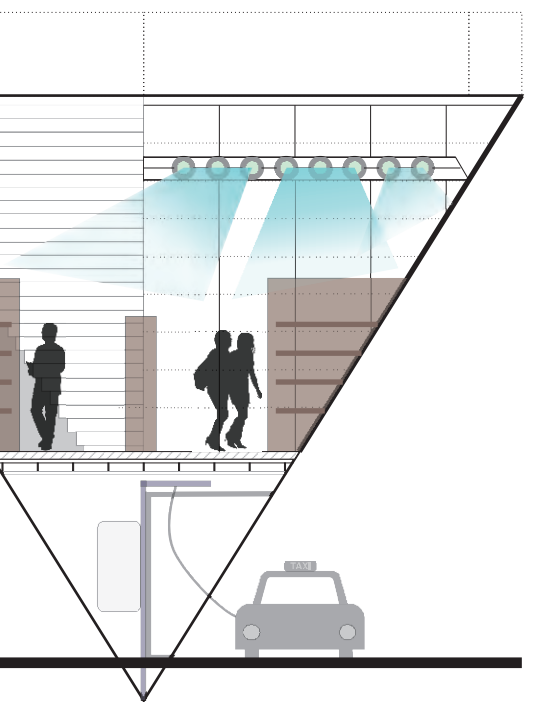
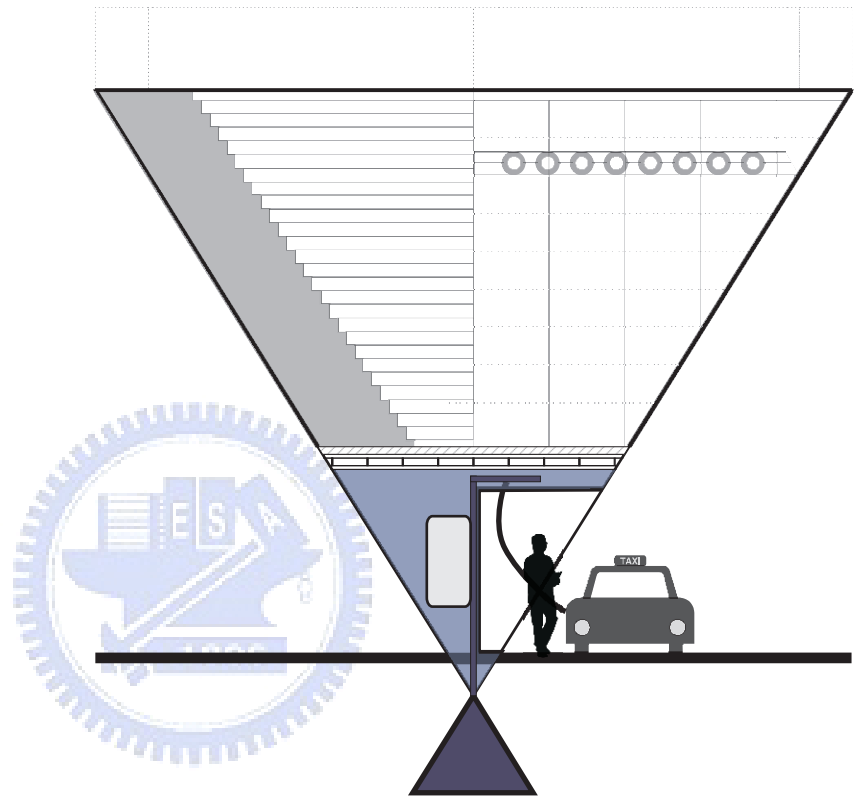
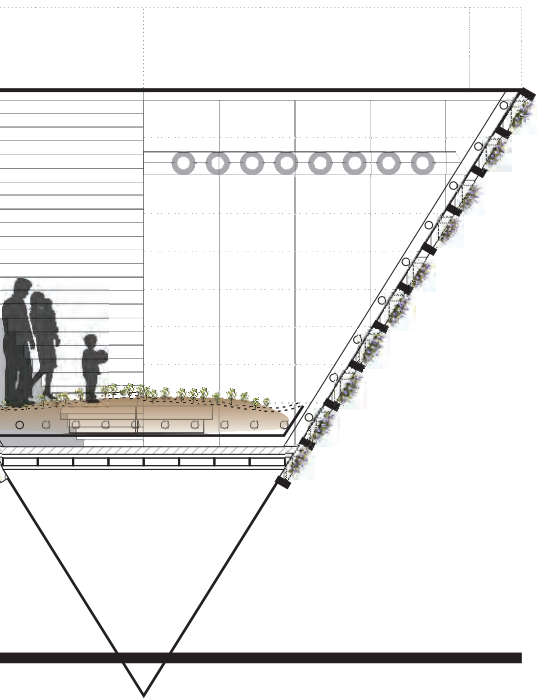


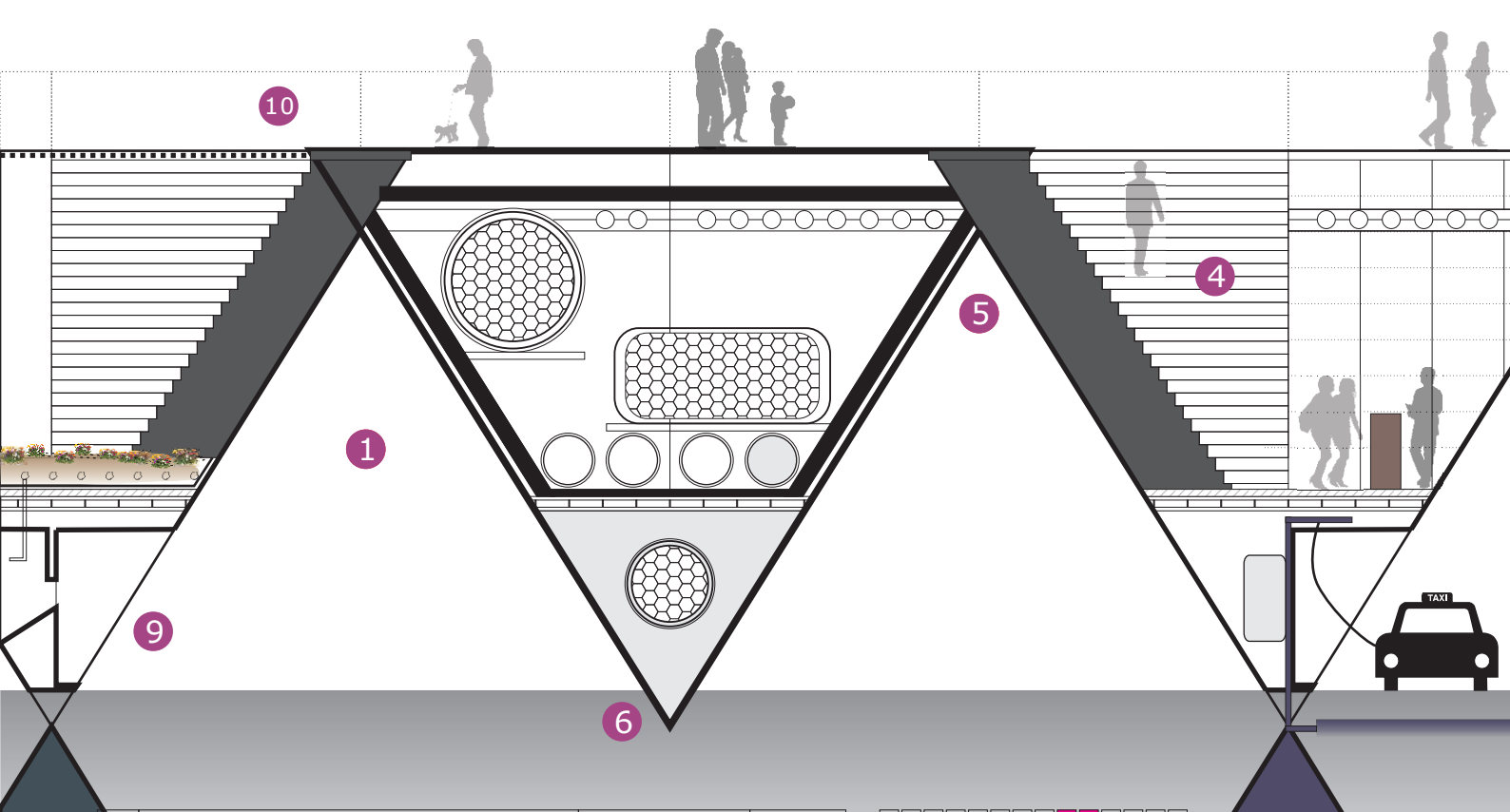
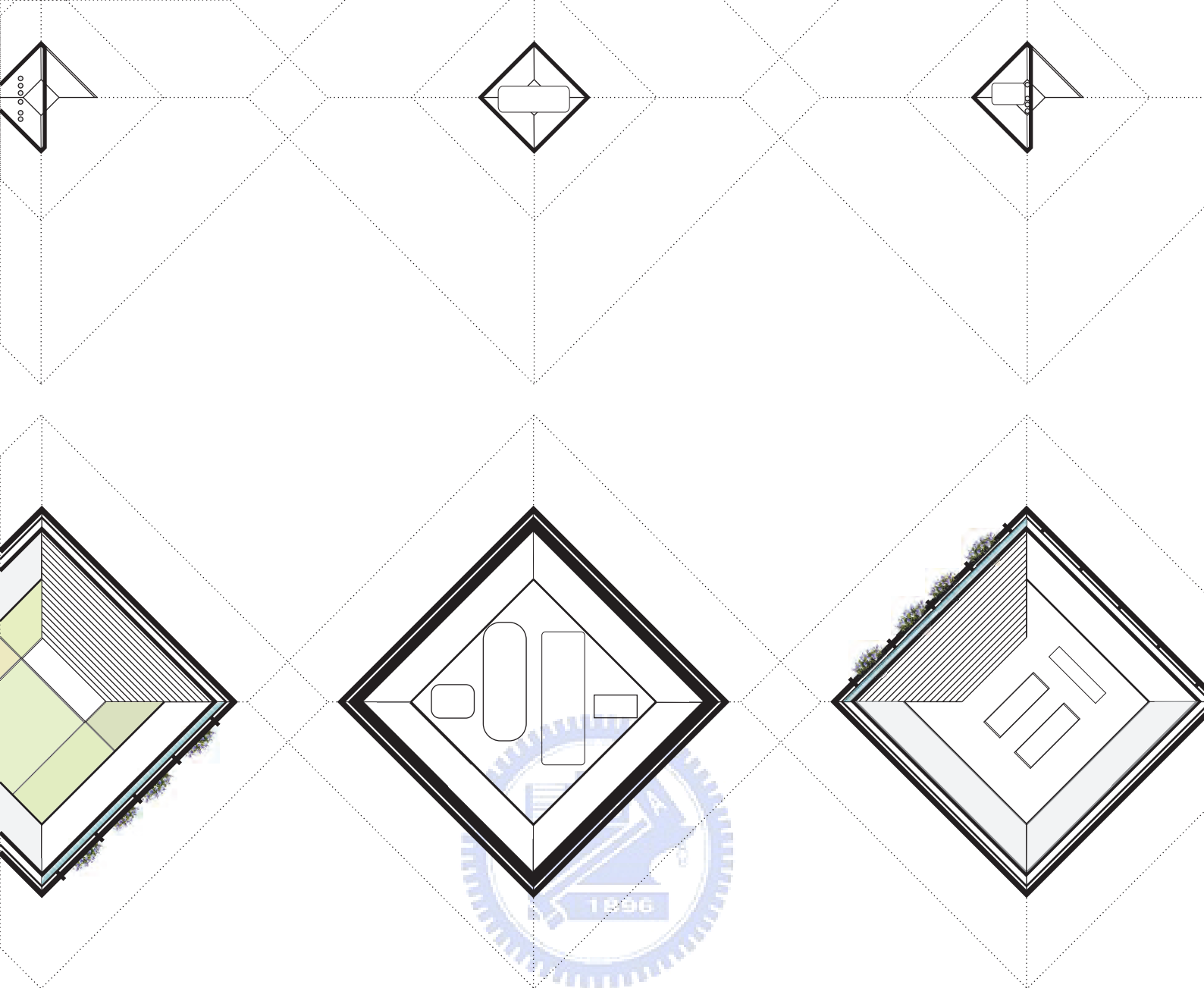
and vegetables cultivation ●

● Power station

d vegetables supermarket ●

● Bus station





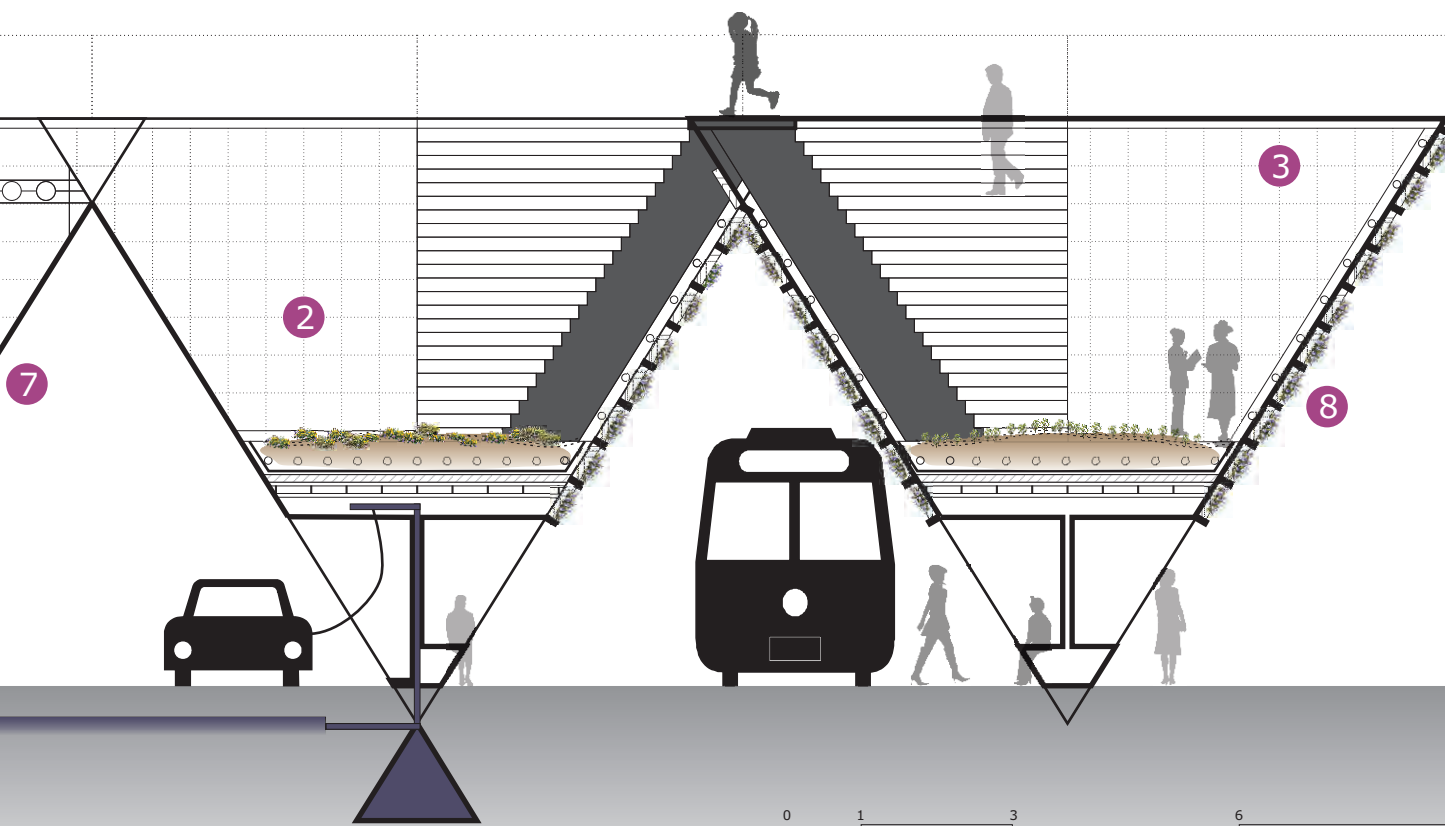
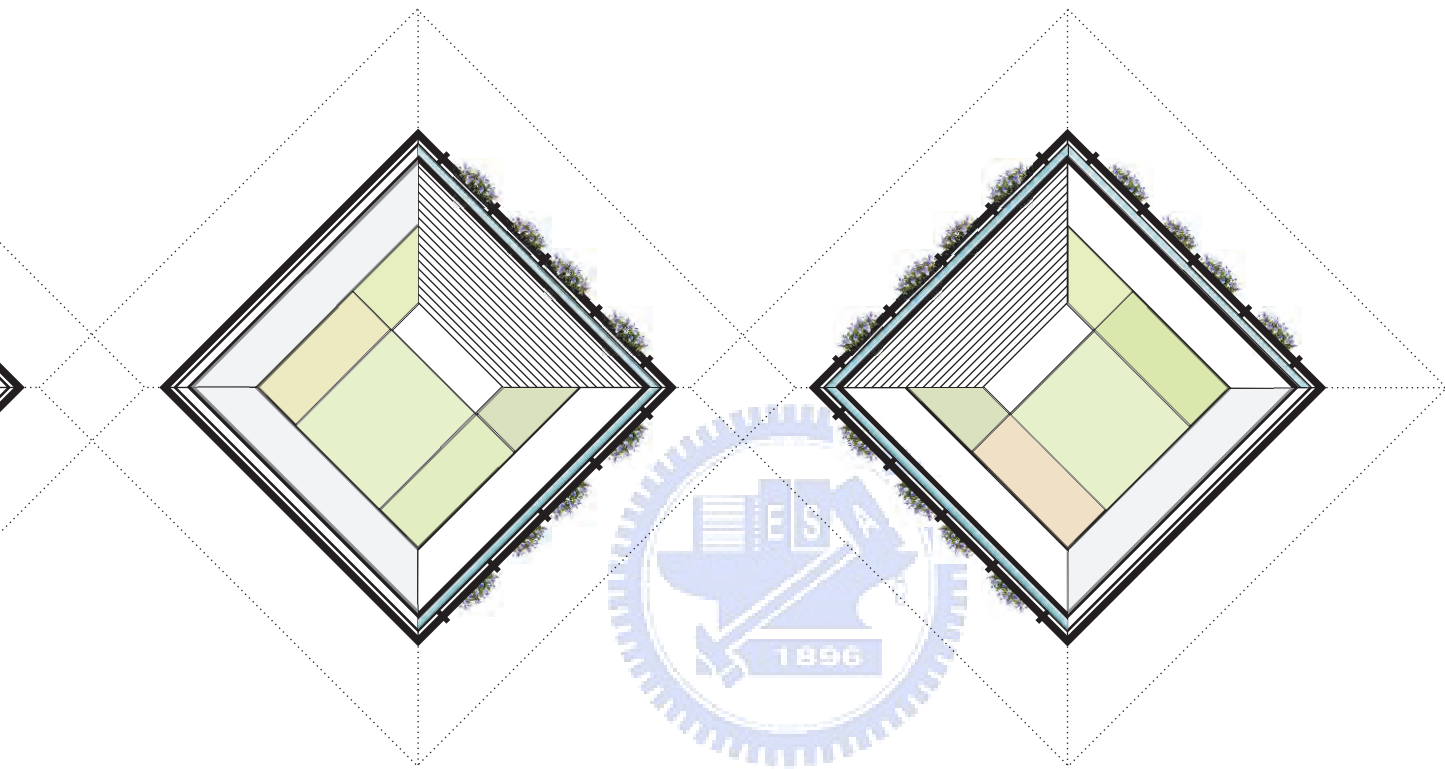
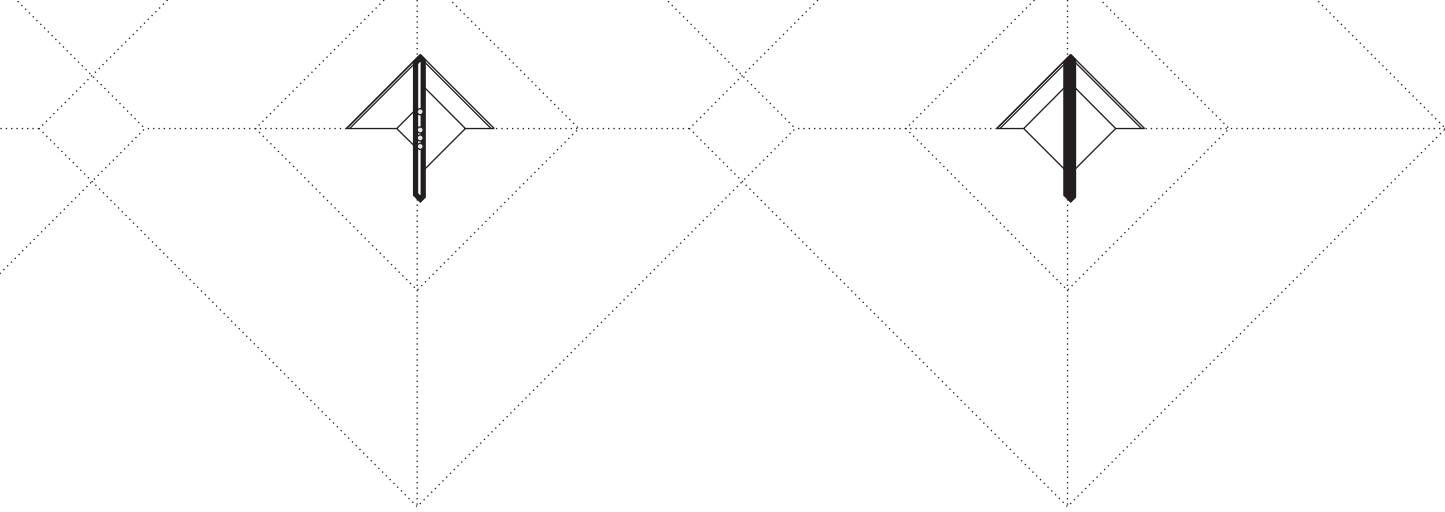
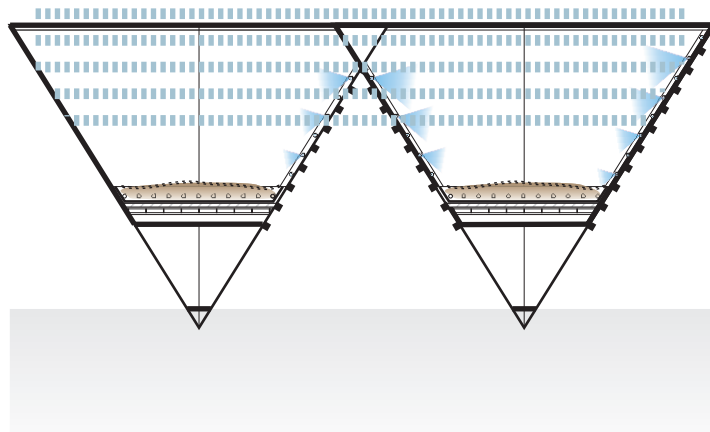
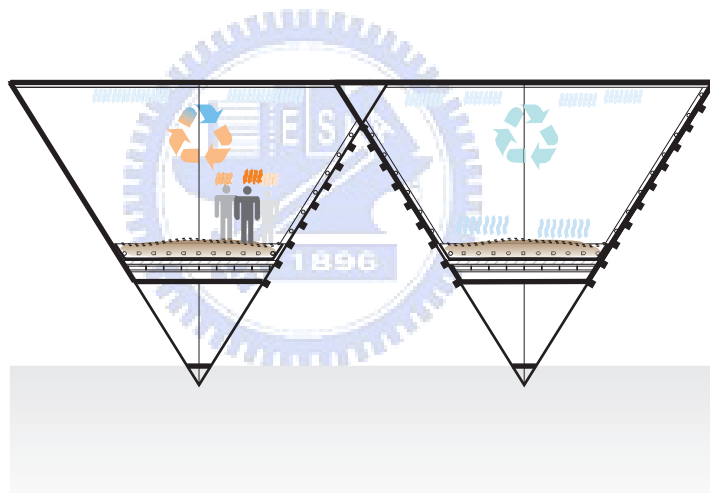
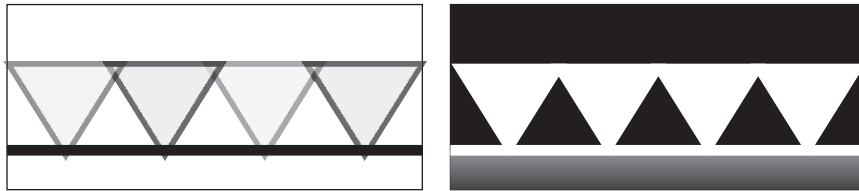




Figure 1

Cooling & warming 2

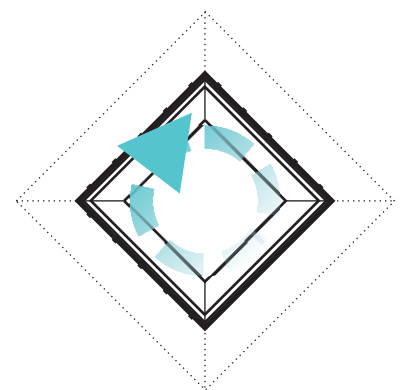
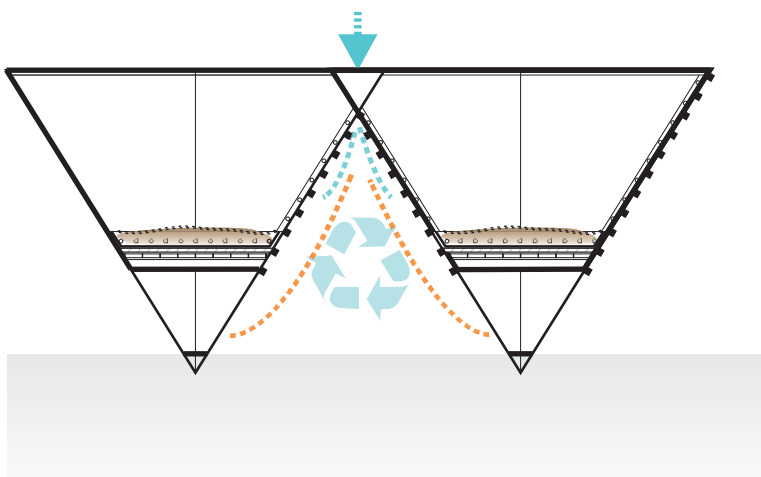
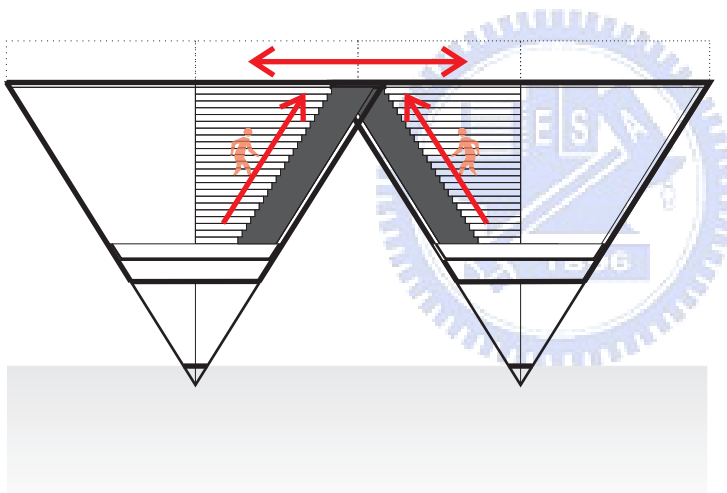
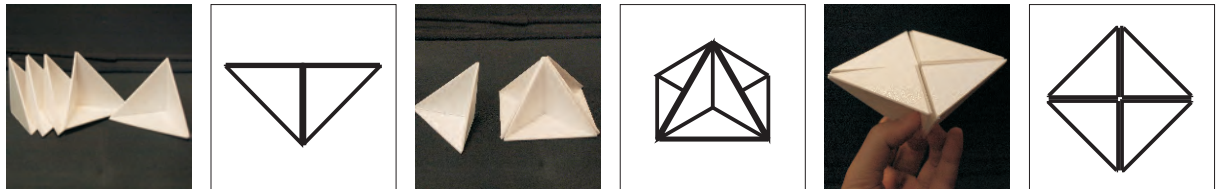
Water system 3

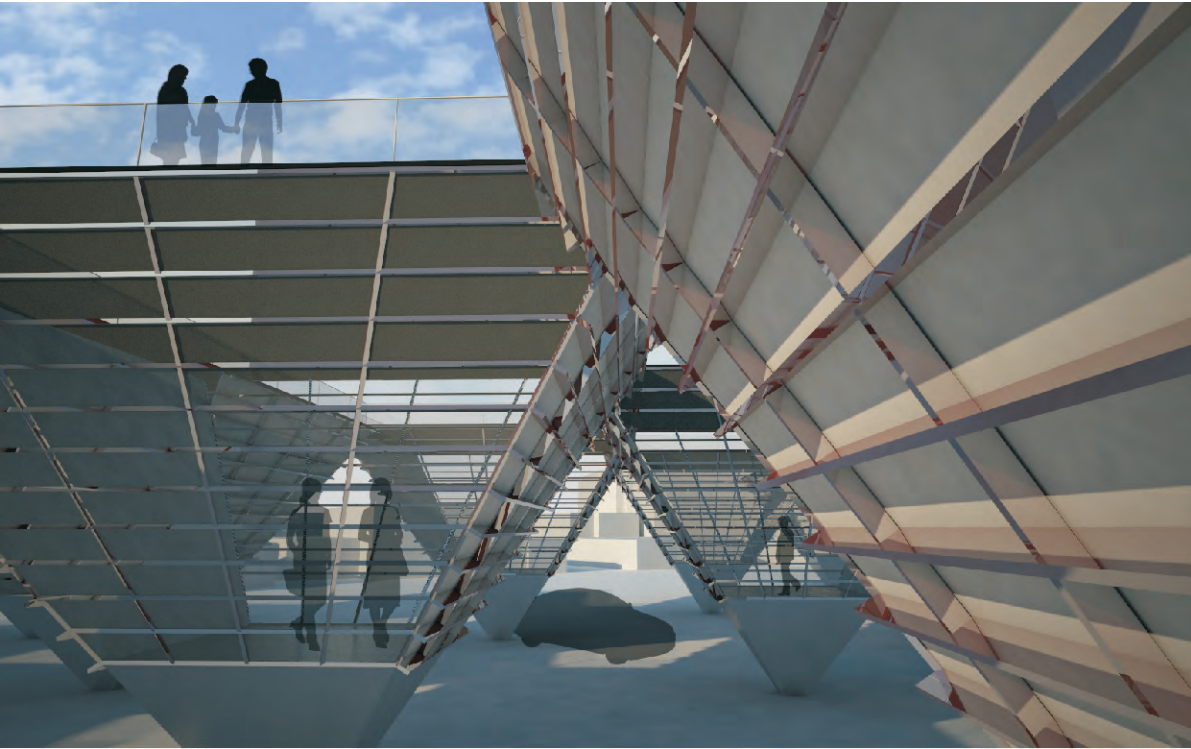


6 Form

4 Circulation of people

5 Circulation of fresh air

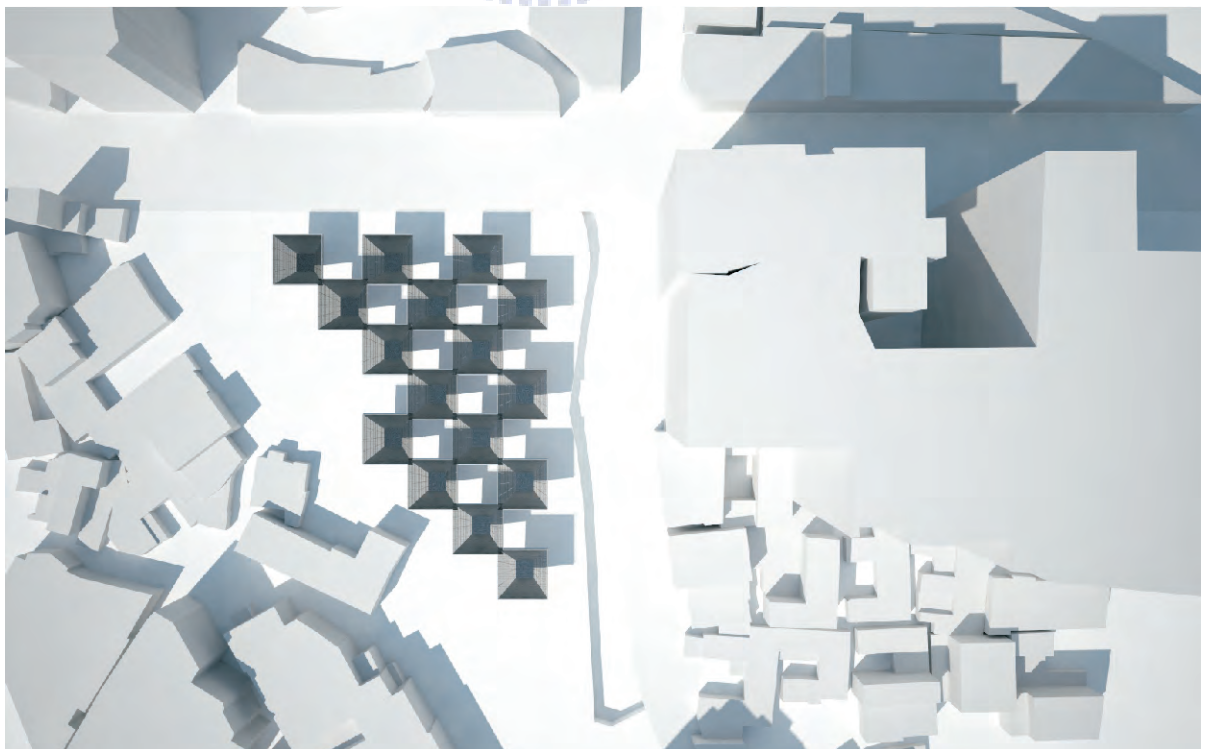
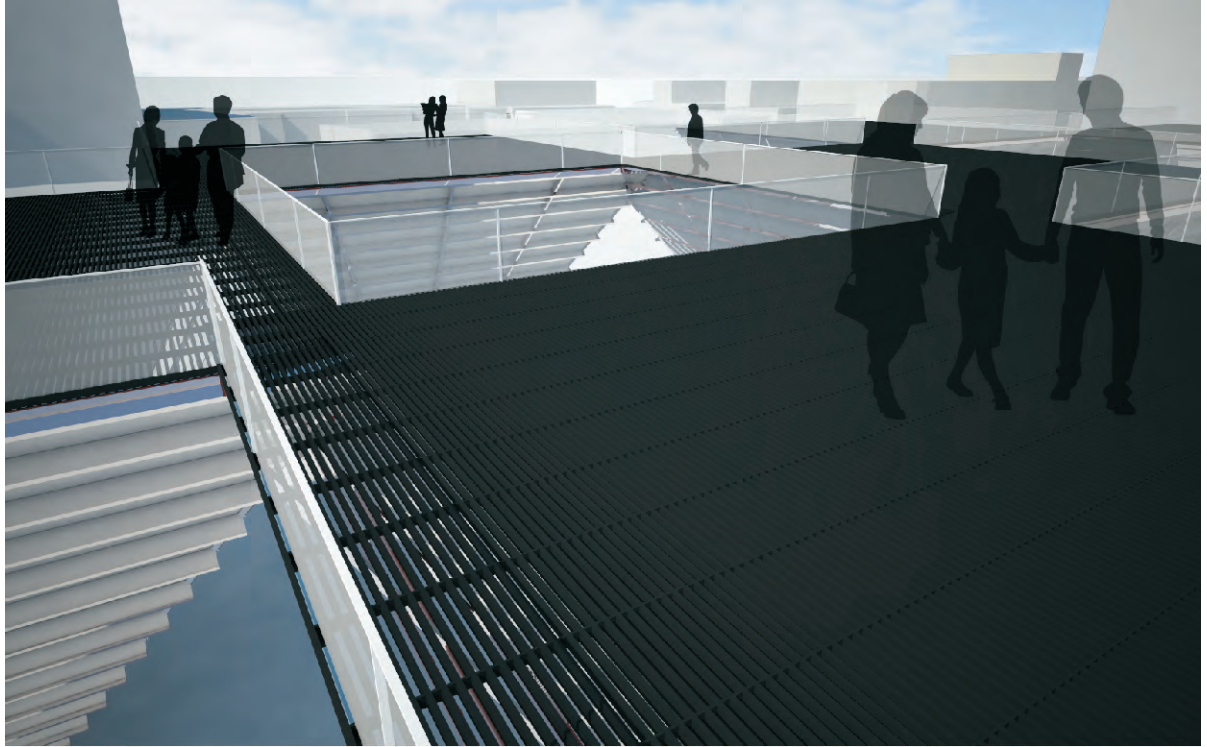






10

11





# Decompress

2009 Fall optional studio, Adviser: Kyle Yang

Taipei, Taiwan



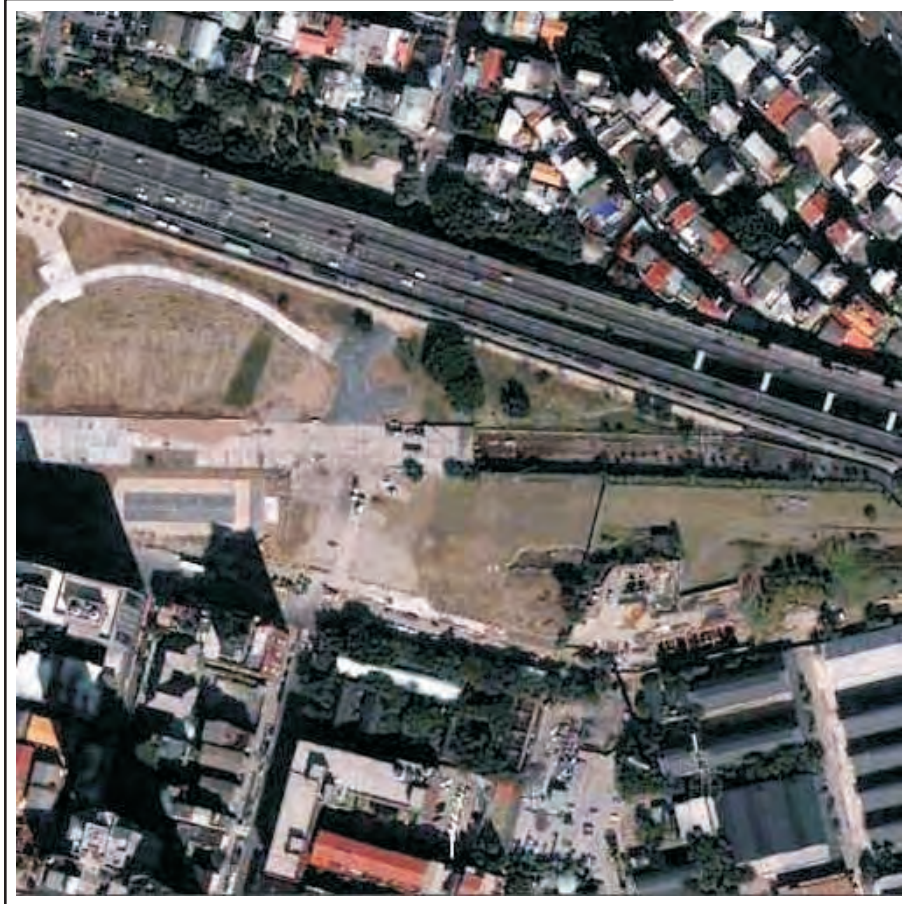






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 交通部台灣鐵路管理局  
 行政院文化建設委員會  
 華山中央藝文公園

google earth







Soft & Hard

HARD

SOFT

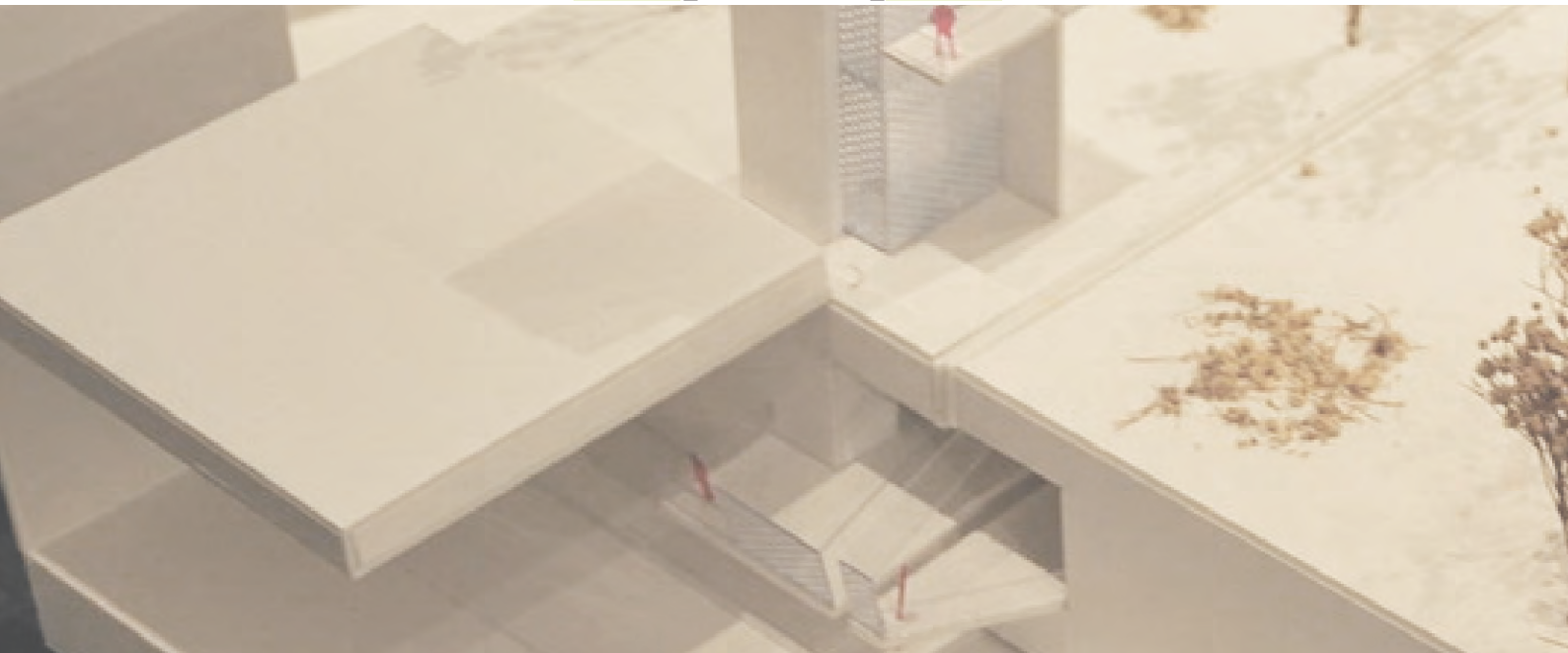
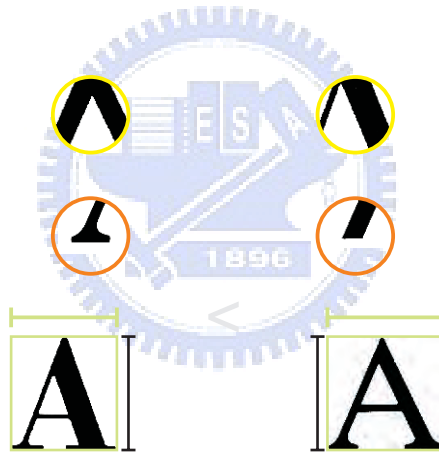
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x-height | Subject x

x-height | x-height |  
fit to be a title

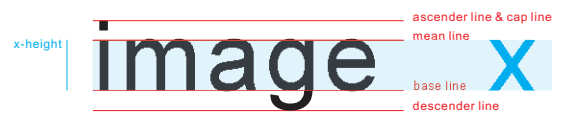
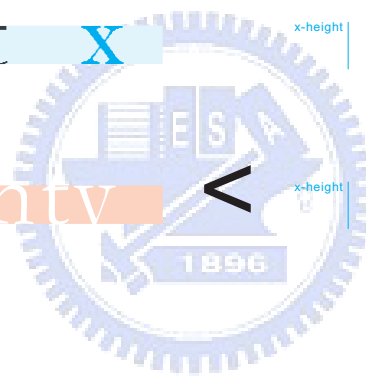


x-height | x-height |  
fit to be themes



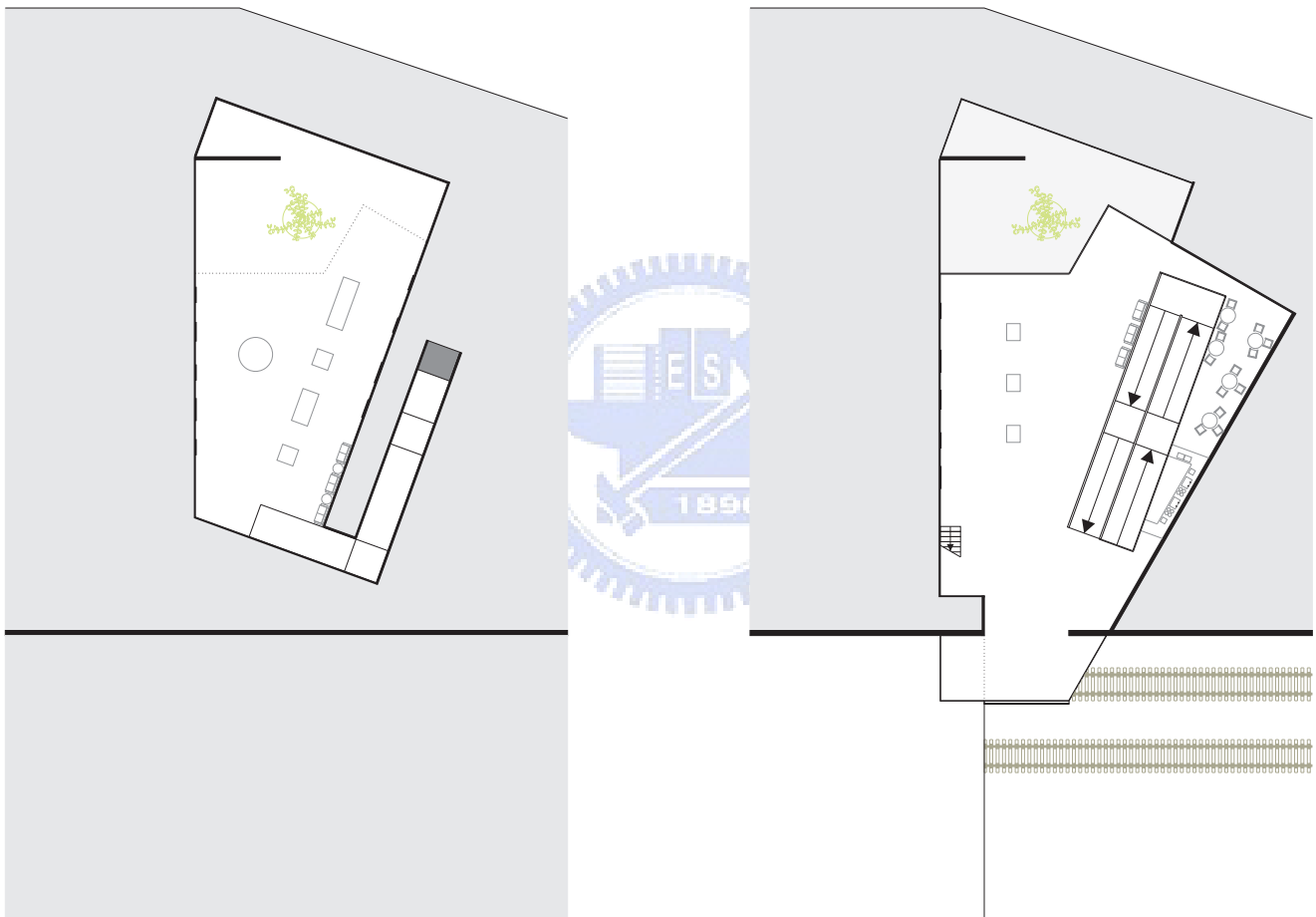
# X-height and proportion

## Letterforms analyzed



First floor

Second floor



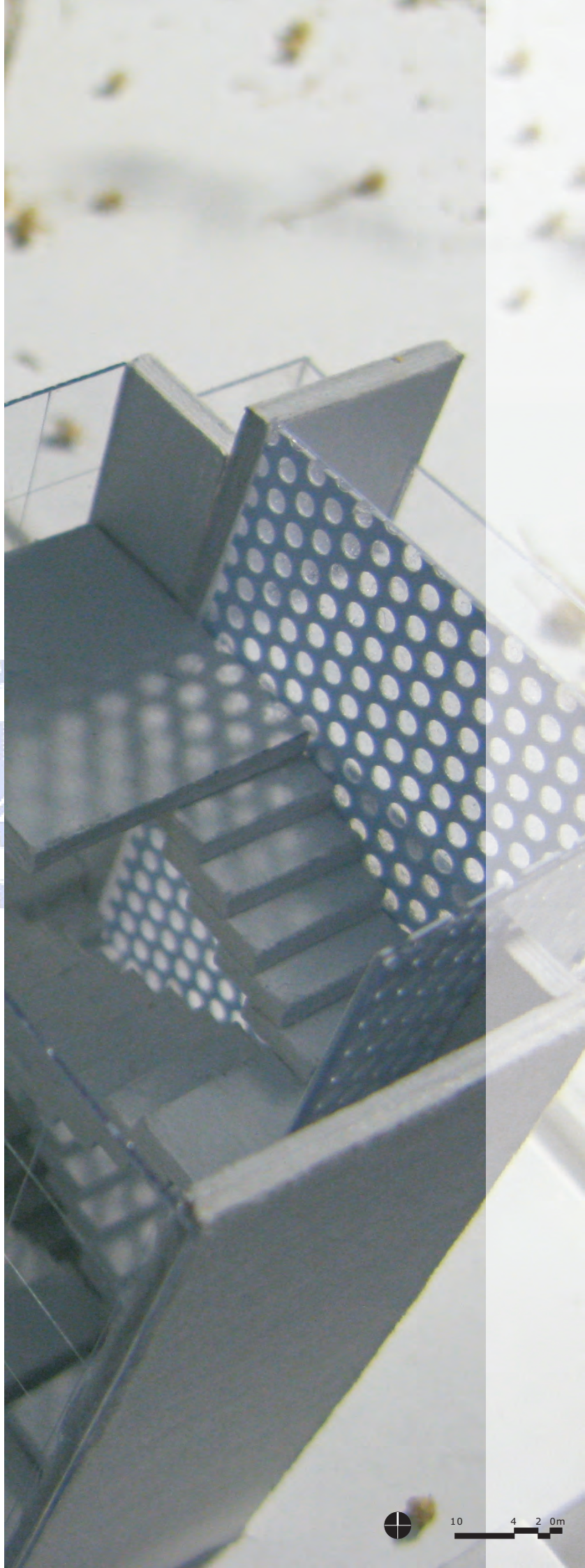
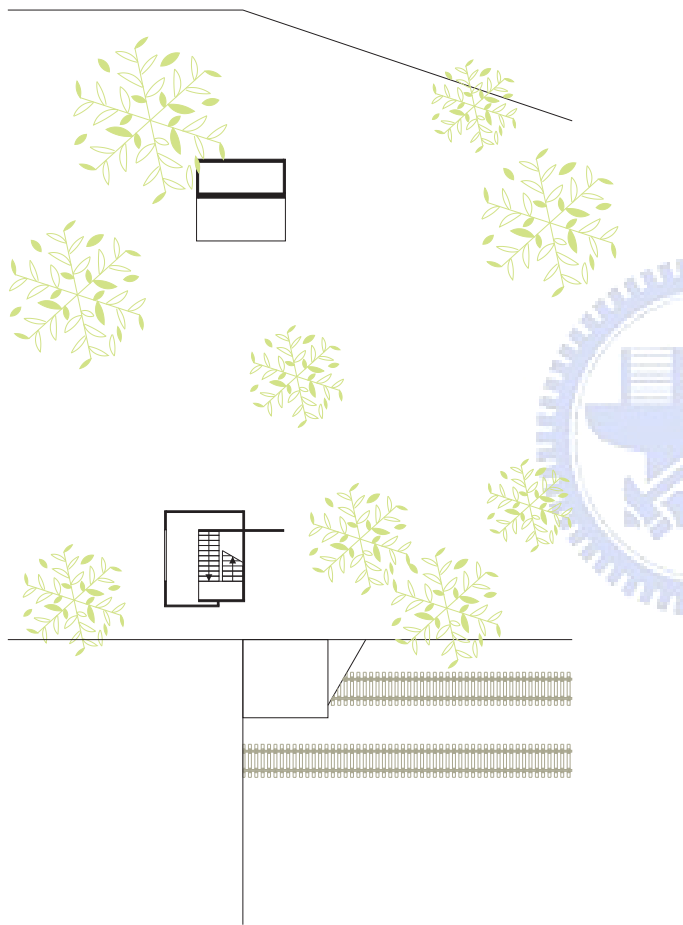
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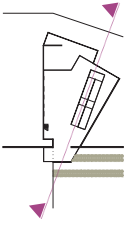
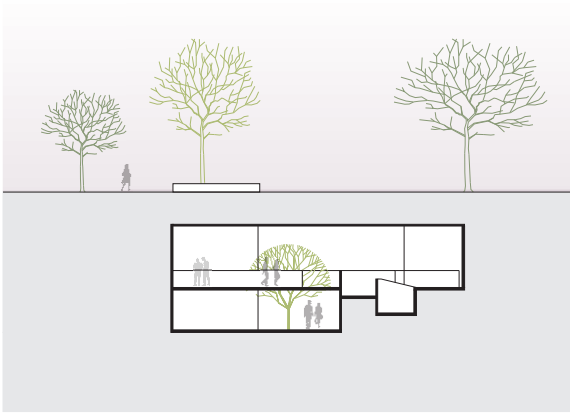
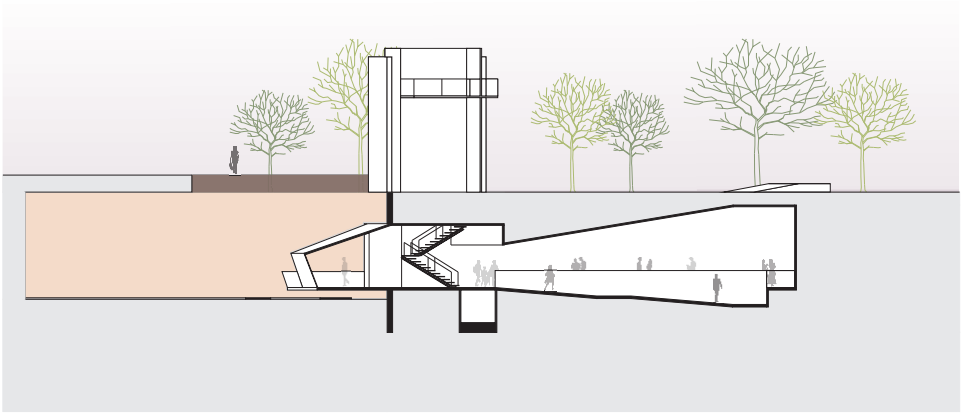
Taking the purest concept as a beginning, the strong contrast about certain thing is what I looked for and that is Soft & Hard. Much analysis was made under this design issue. I use English font as the analysis target of this project. To find meanings among the fonts, to classify and transform, and to conclude the main principle before dealing with the site. The site of this project is located in Huashan Central Culture Park. It is a place with conflict condition. In order to respect the site condition, almost every building was arranged underground. The gallery space is compressed above the ground and is decompressed underground.





Third floor

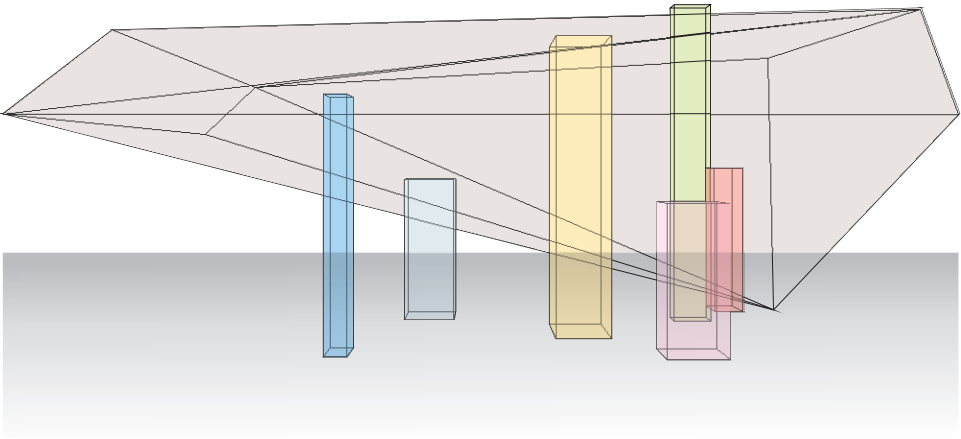
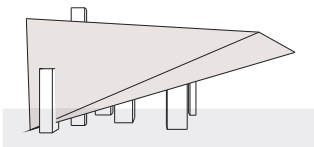
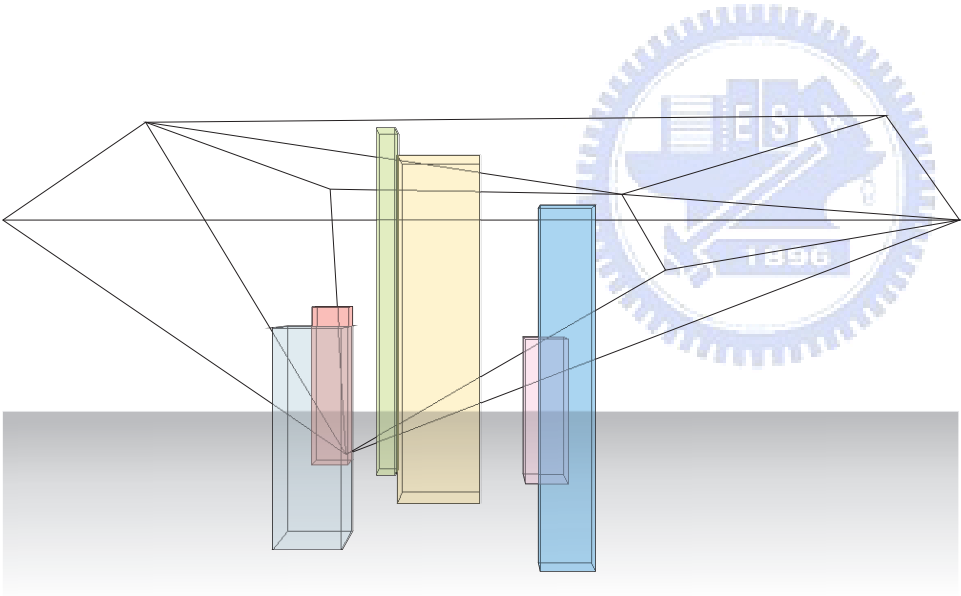




Section A-A'

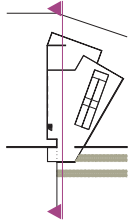
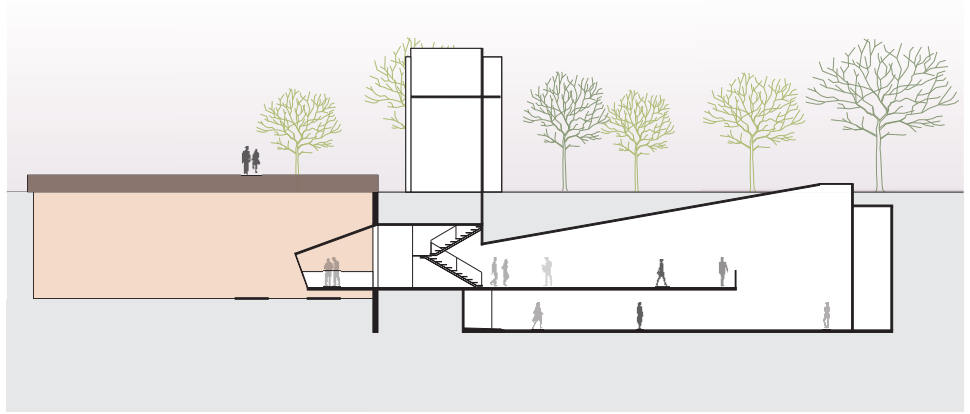


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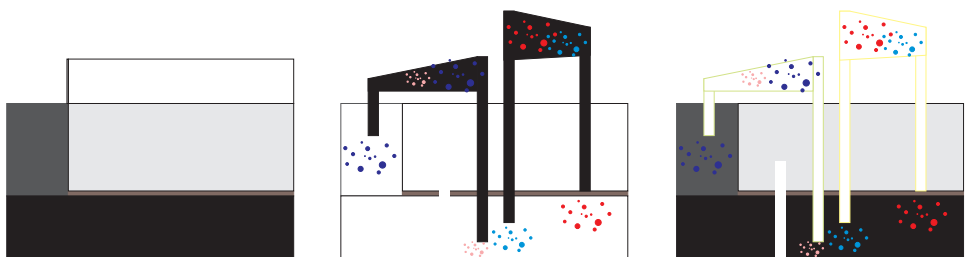
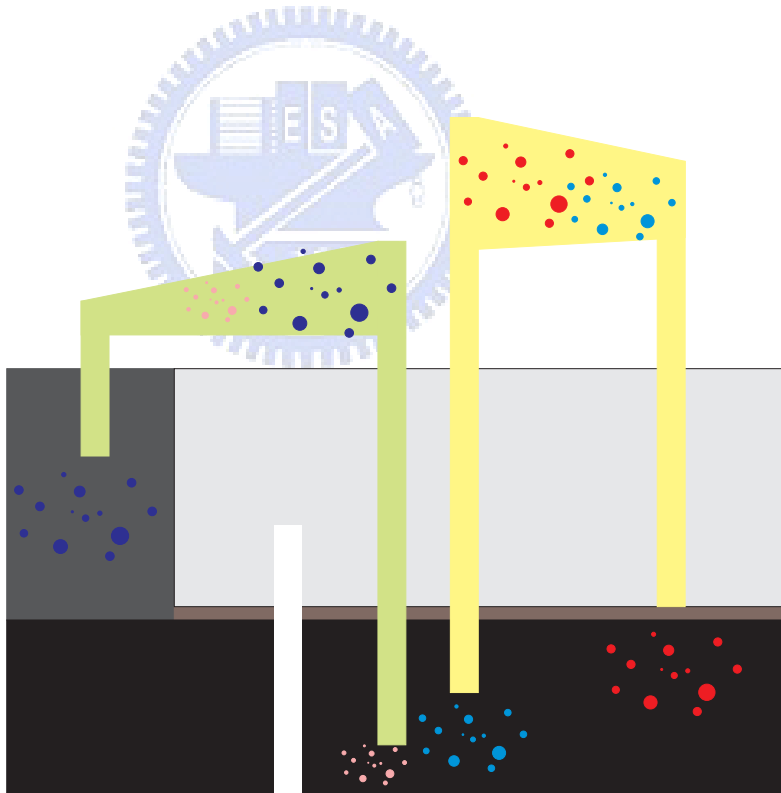


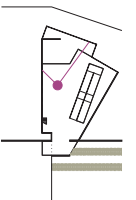
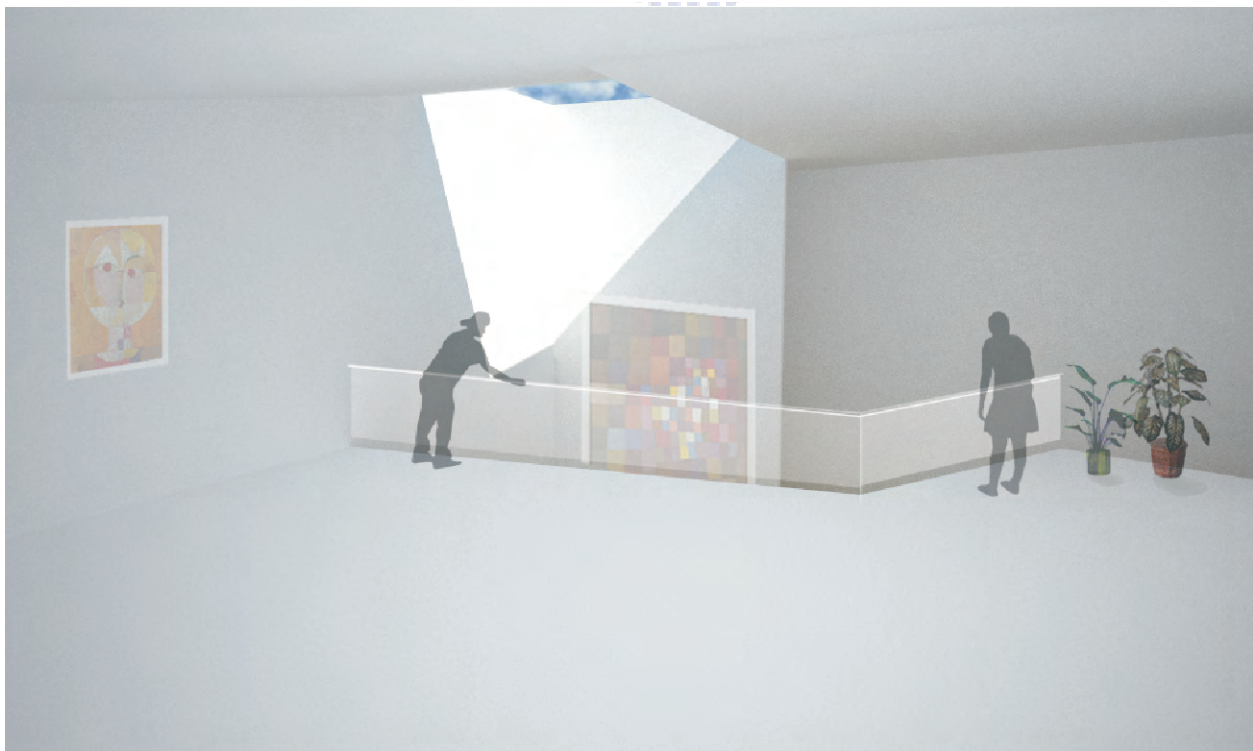
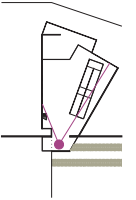
Digram



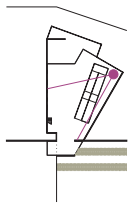
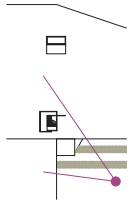


Section B-B'



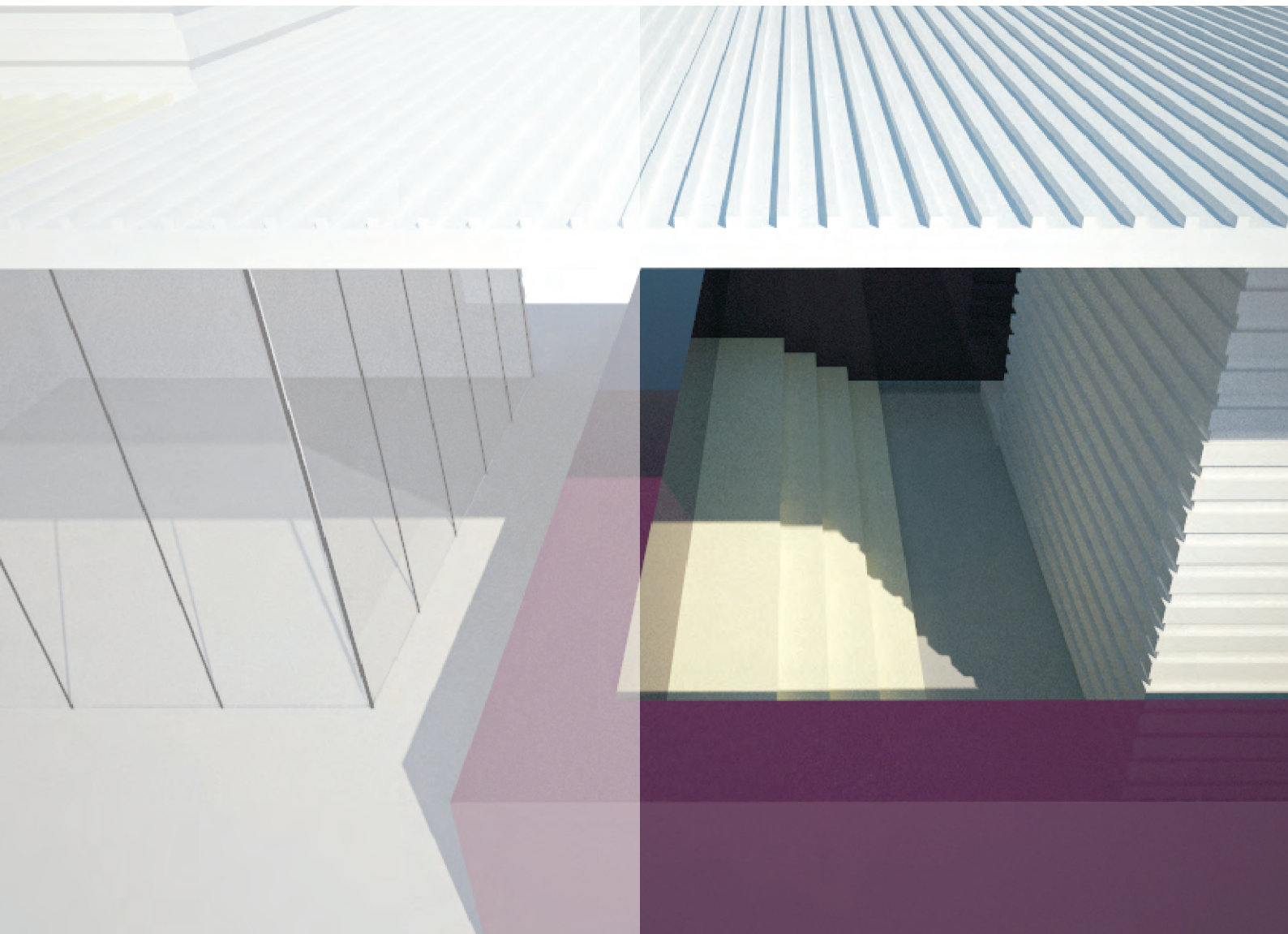






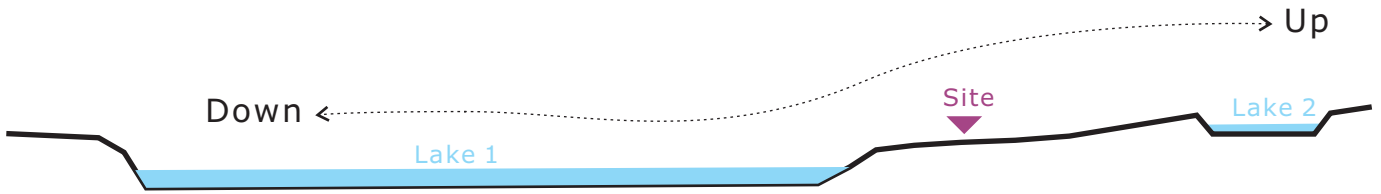
# The Waffle House

2009 Workshop, Adviser: Carlos Arnaiz  
NCTU, Taiwan

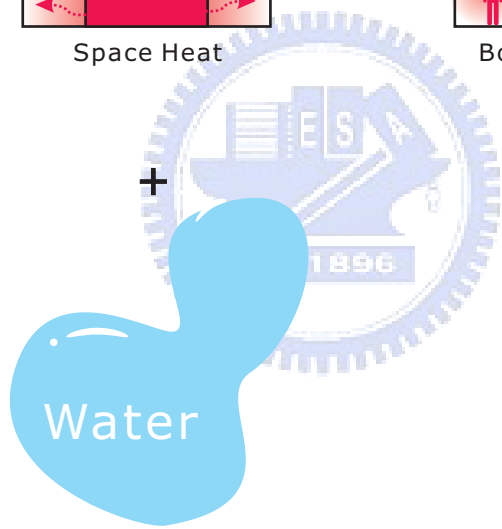
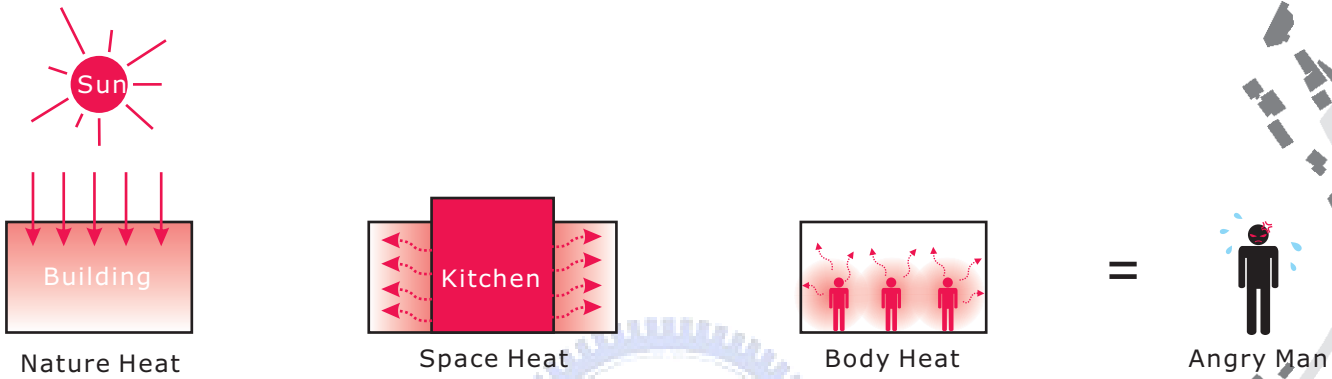




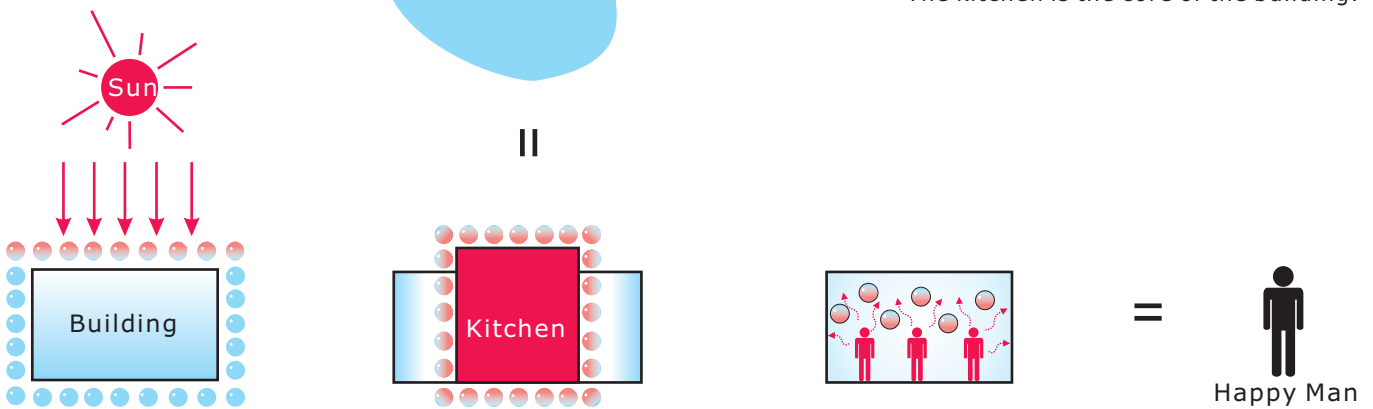




Section

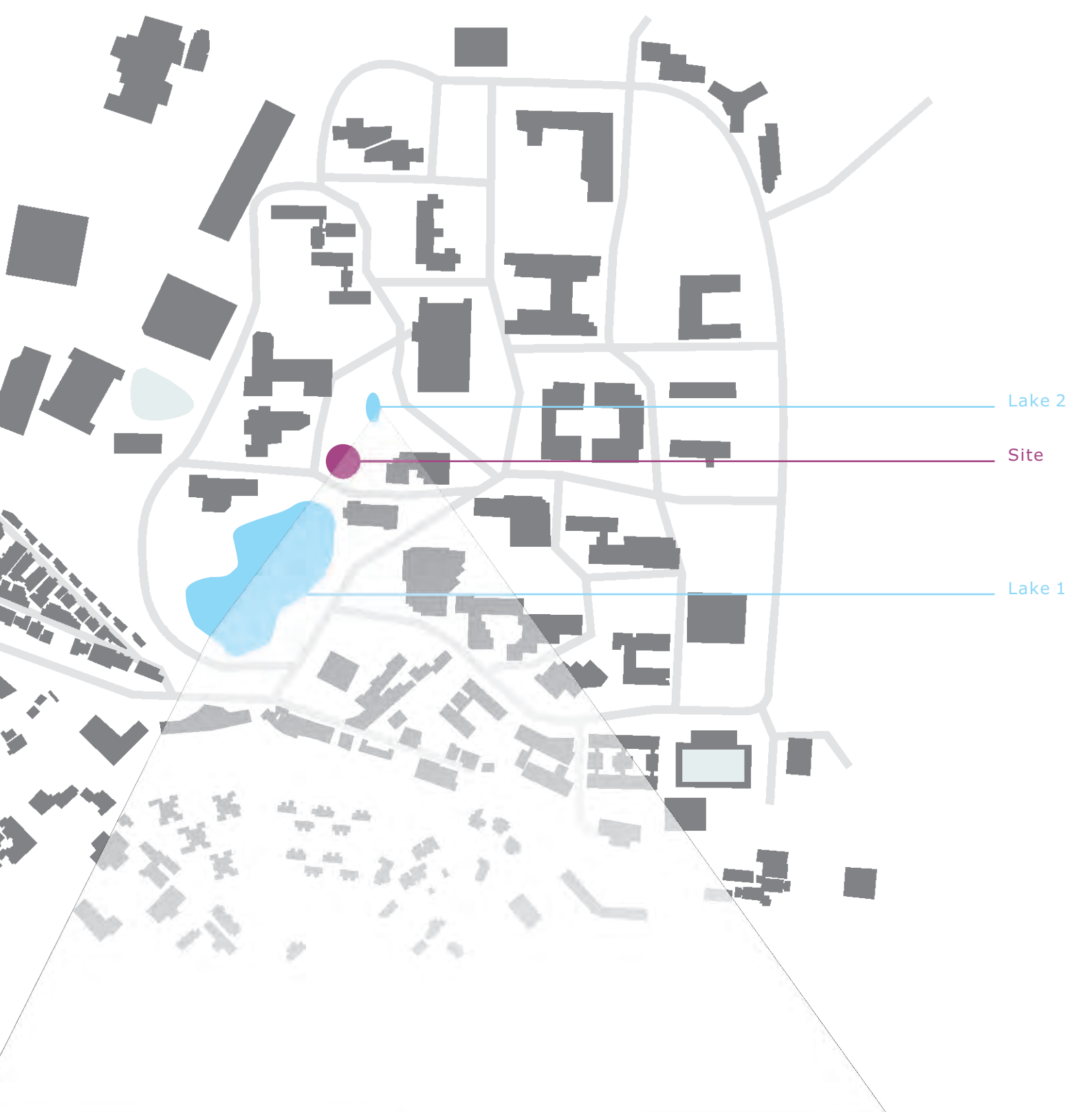


The kitchen is the core of the building.



Concept



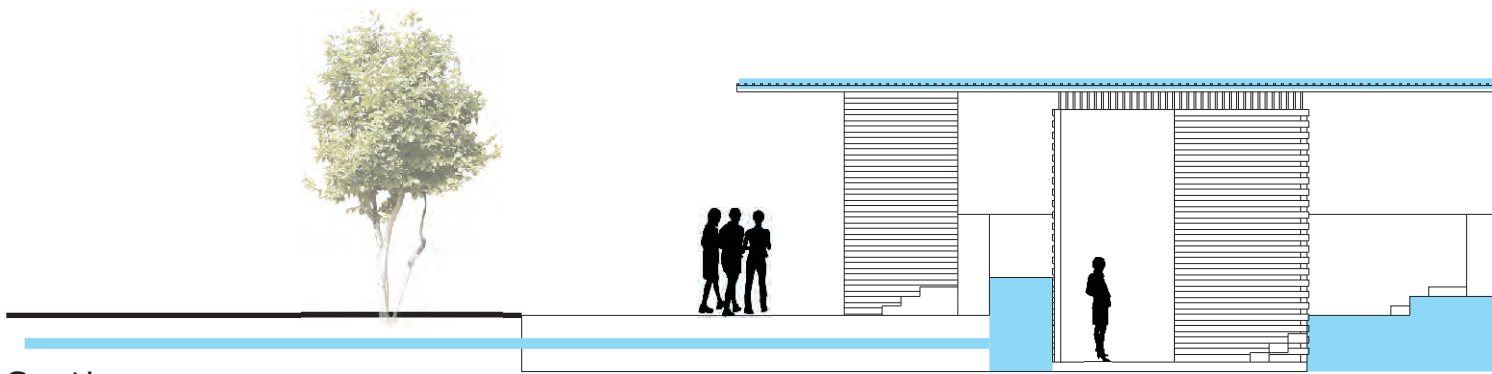


Lake 2

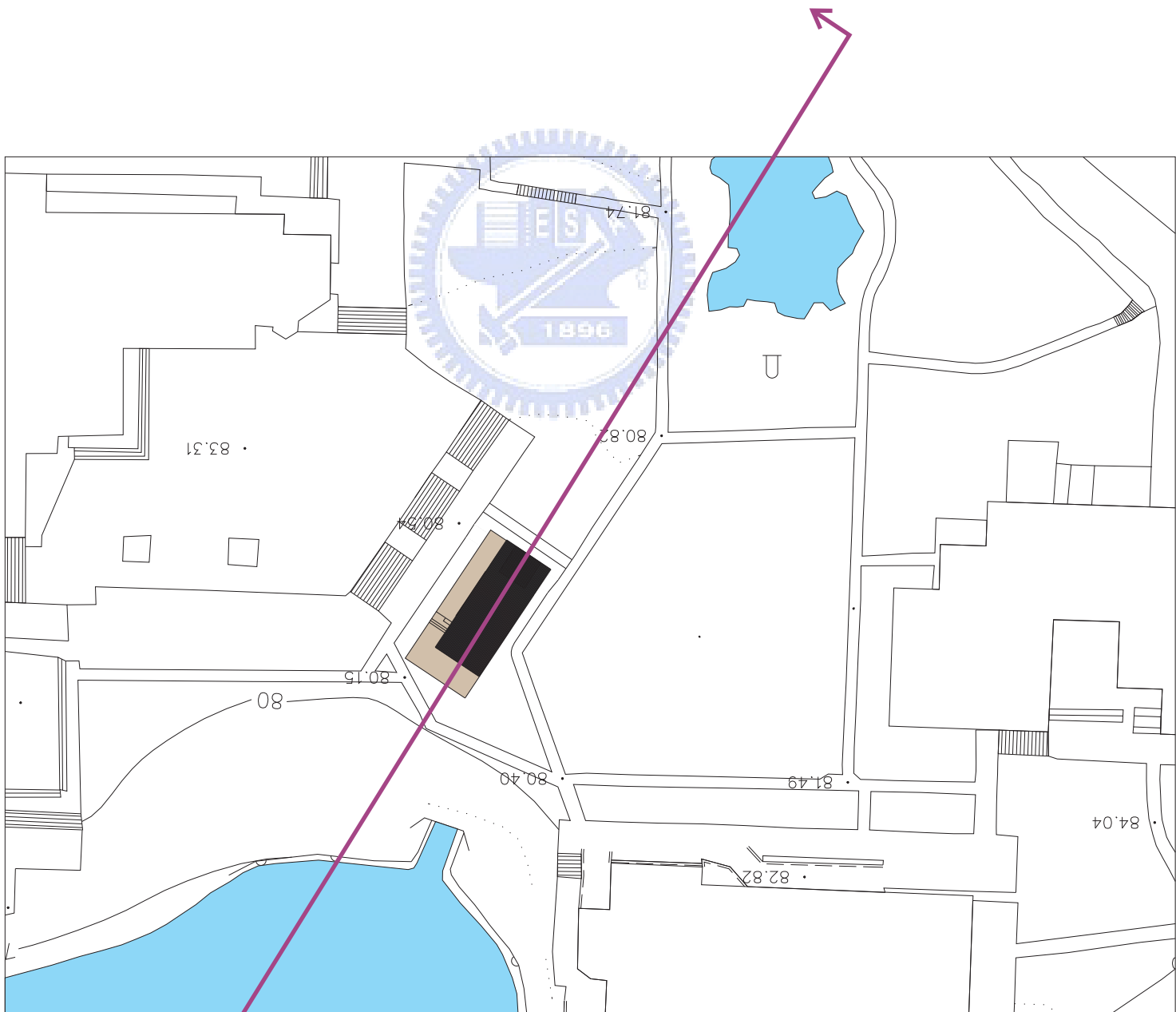
Site

Lake 1





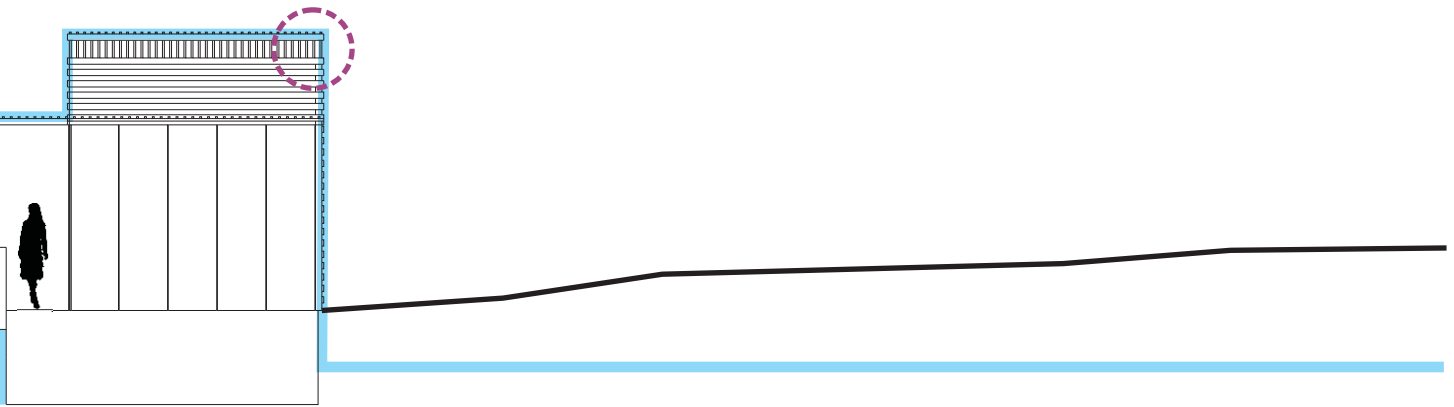
Section



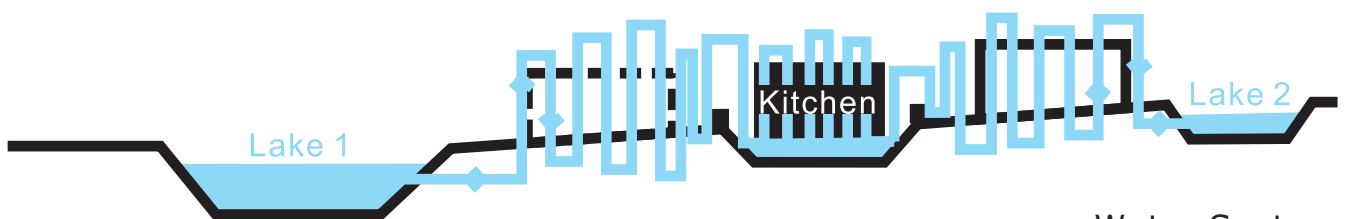
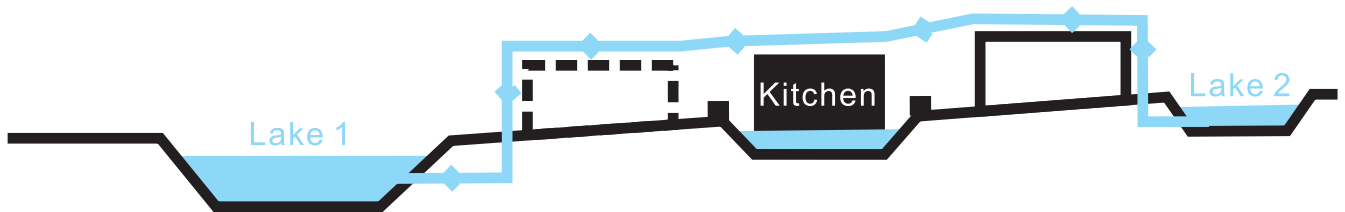
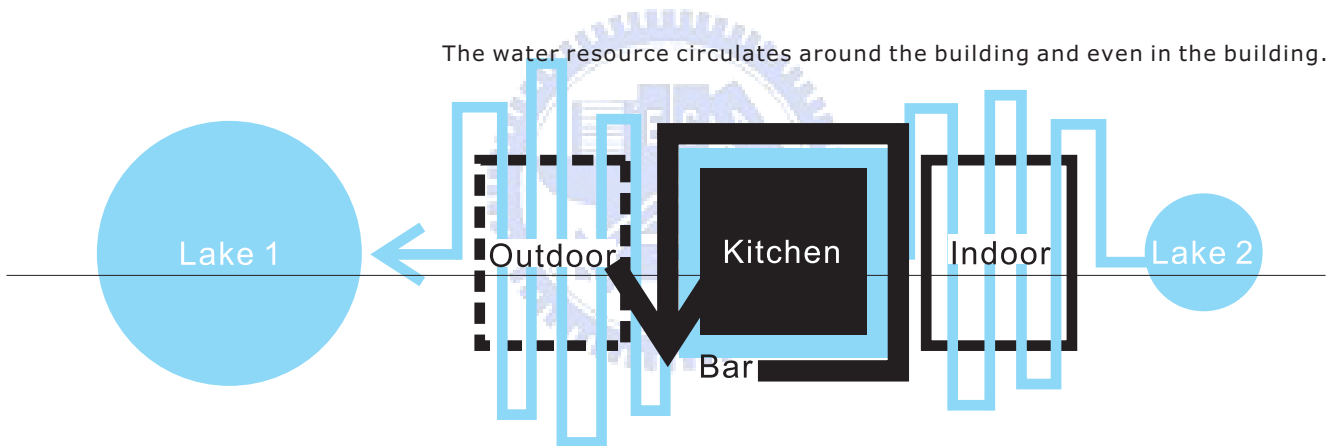
Site Plan



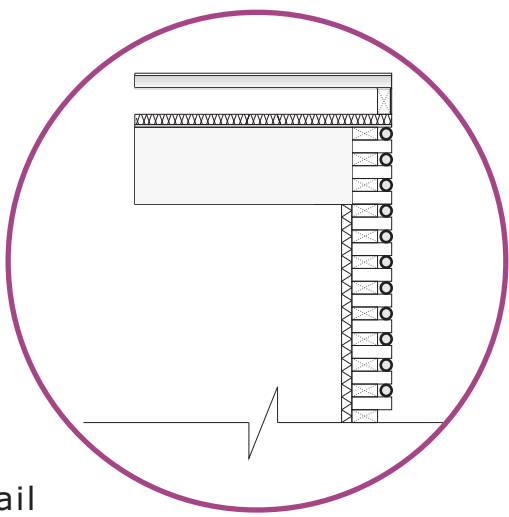




The water resource circulates around the building and even in the building.



Water System



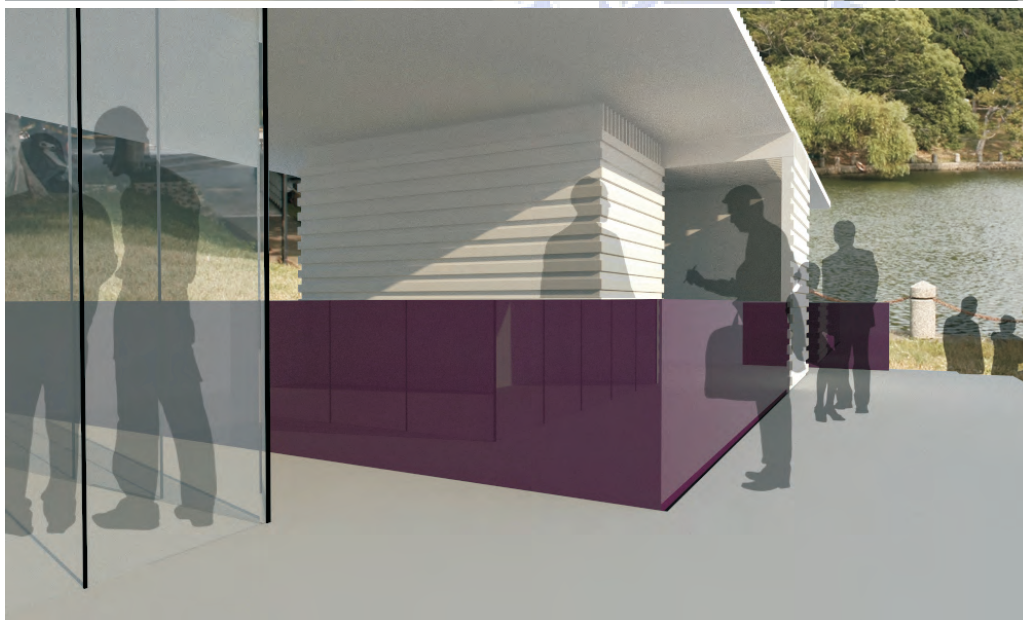
Roof



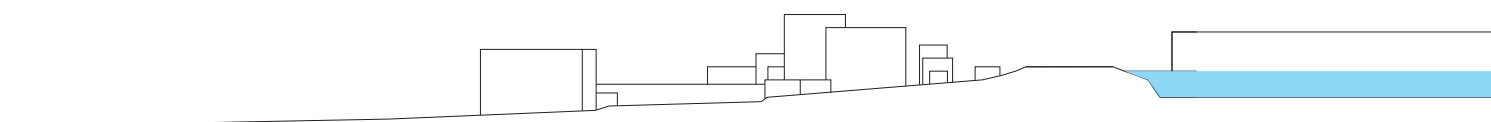
Wall



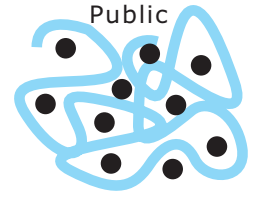
Detail



Break the volume into pieces to make it fit in to the natural landscape.



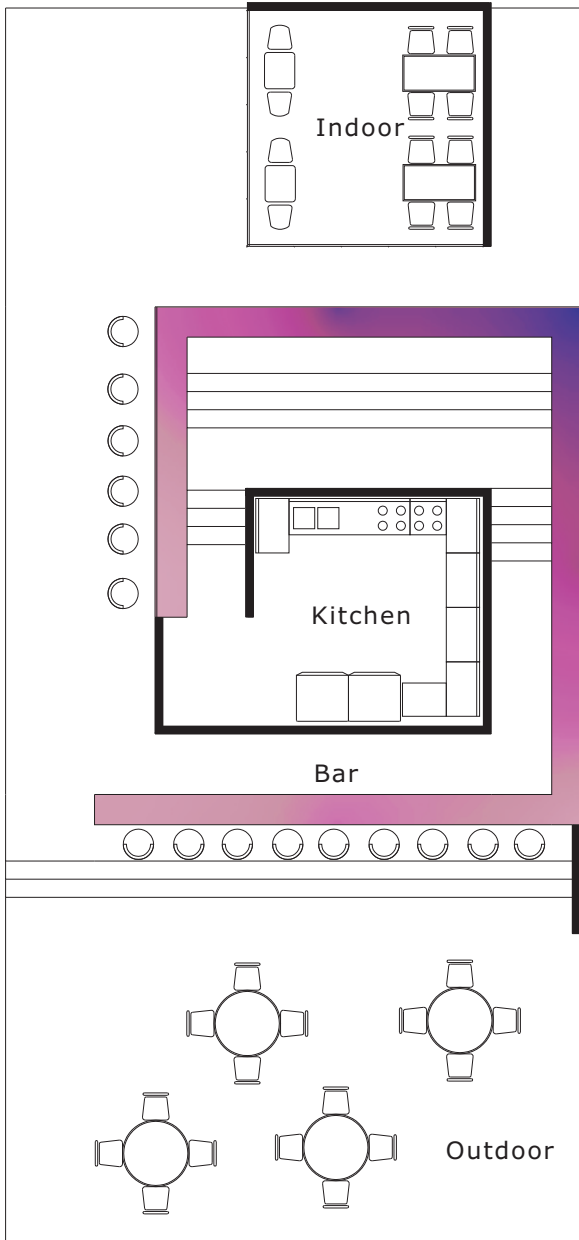
The special wall design can achieve the effect of heat output without air conditioners in the building.



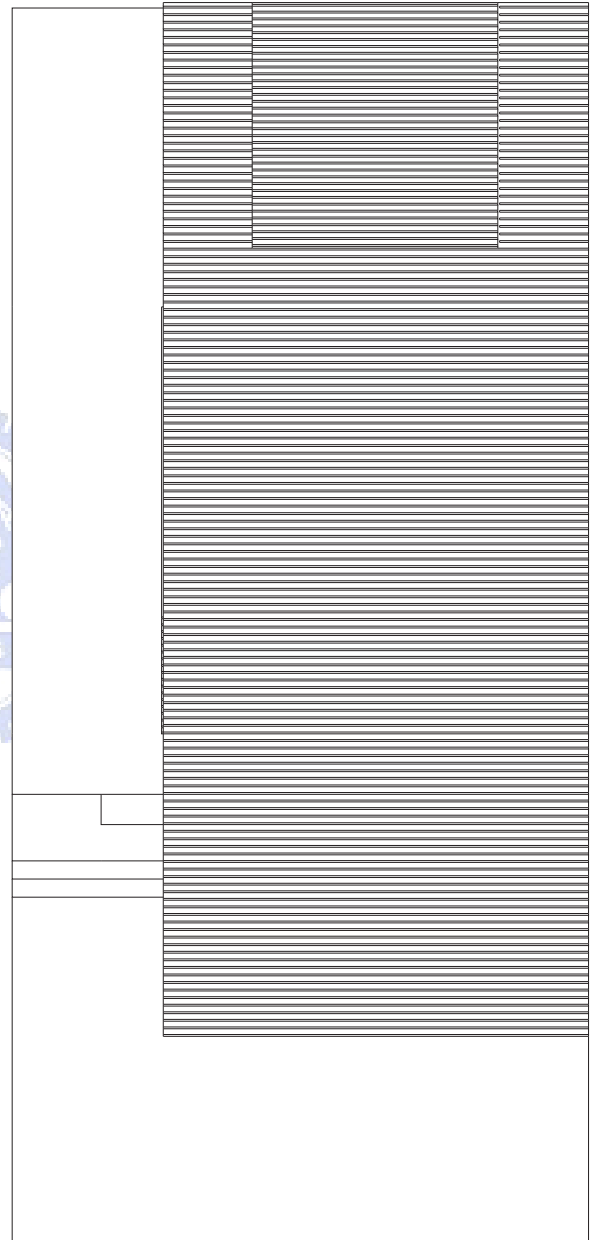
Space type

+

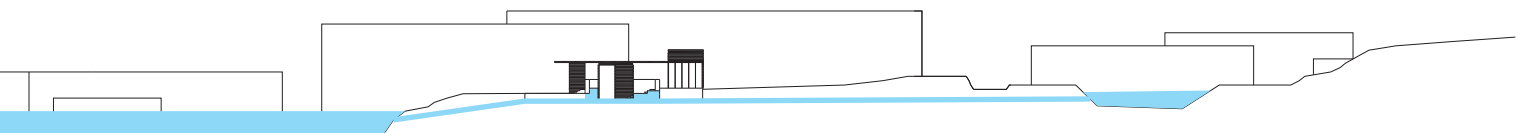
Water



1st Plan



Roof Plan



Section