Senior Co-housing Design in China's Suburban Environment

by

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Master of Architecture

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The main design problem that I investigated is:
How might senior co-housing in China's suburban environment interact with culture, comfort and energy as a response to China's aging issues?
The topic will be explored into the following two parts:
(1) The feasibility study of senior co-housing as a new housing type responding to China's aging issues.
(2) The prototype design of a senior co-housing community in China's suburban environment--- a study on its interaction with culture, comfort and energy.

China is currently experiencing a rapid demographic shift. In mid-January 2011, China's National Bureau of Statistics announced that China now has roughly 185 million people over the age of 60, and this number will increase to 248 million by 2020 (Benjamin Shobert 2012). According to the data from the United Nations World Population Prospects at May 31, 2011, by the year 2030, more than 24.4% of China's population will be over the age of 60, compared to the ratio of 25.3 in the U.S. The increasing aging population will make China one of the oldest countries in the world.

While the aging issue is global, the specific context makes it unique in China. The "one-child policy" (officially translated as "family planning policy"), which restricts urban couples to only one child, has been carried out since 1979("Family Planning in China" 2013), and dramatically changed the family structure in China. In the beginning of last 90s, every 1 elderly in China was supported by 10 adult children. For now, assuming the fact that the "one-child" policy is not quite functioning in most rural areas, the ratio becomes 1 to 3. This means the traditional family size is shrinking, and the function of the family is weakening.

Meanwhile, the massive migration among the youth generation in China has made this situation even worse--lots of elderly parents and grandparents stay geographically distant from their children, which means the traditional cross-generational housing model will no longer be an option. Since their single child is unable to care for them, the current age 50+ generation that has been affected by the 'one-child policy' would face a lack of resources and necessities.

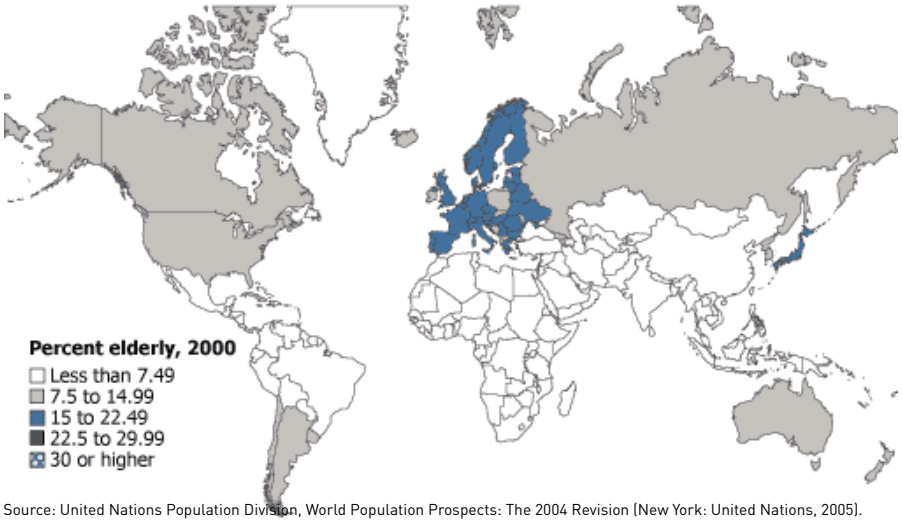
Based on the facts stated above, a discourse arises in recent years: What is the housing option that meets the needs of the current 50+ generation, considering China's context-specific constraints? Starting with the interest of answering those questions, the whole study consists of two parts: Firstly, by studying China's context-specific constraints, proposing an alternative housing type; secondly, conducting a prototype design of this particular housing type by further exploring the design problem.
The first part has been done by the author through an independent study during the Fall 2013 semester, in which the author discussed the importance and feasibility of applying senior co-housing in China's suburban environment as a solution to China's aging issues. In the Master Study Design, the author will combine the knowledge/ findings from the independent study with design strategies. Chosen a senior co-housing community with 15 occupants in a selected suburban environment as the study object, the author hopes to find a design solution by proposing a scheme that interacts with culture, comfort and energy.

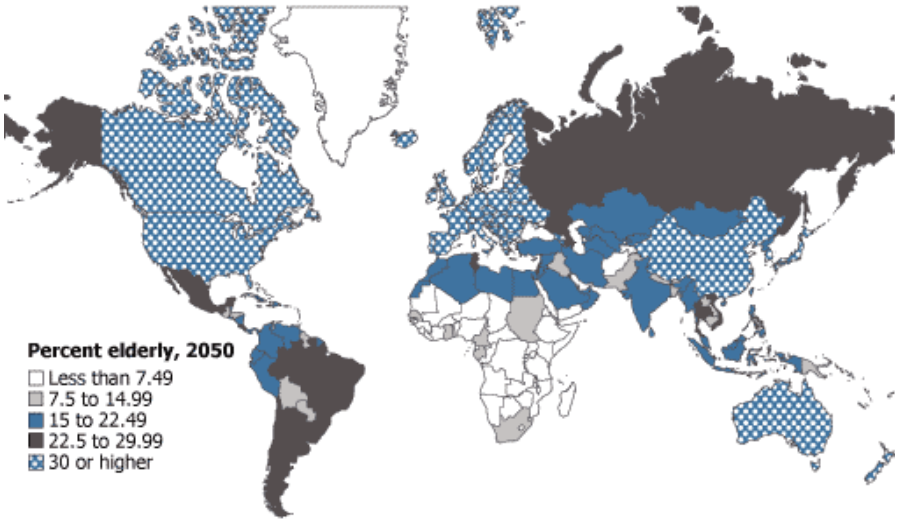
SENIOR COHOUSING DESIGN IN CHINA

RUI LUO SPRING 2014 MDS INSTRUCTOR: PETRA LIEDL | ADAM PYREK

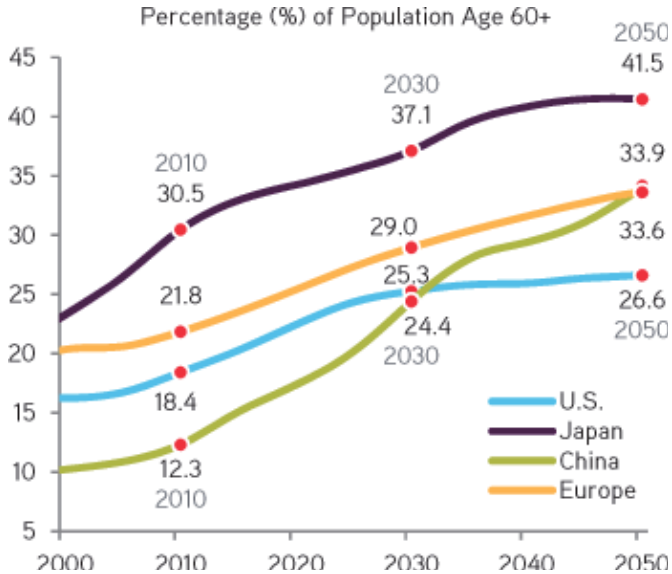
INTRODUCTION

ISSUES





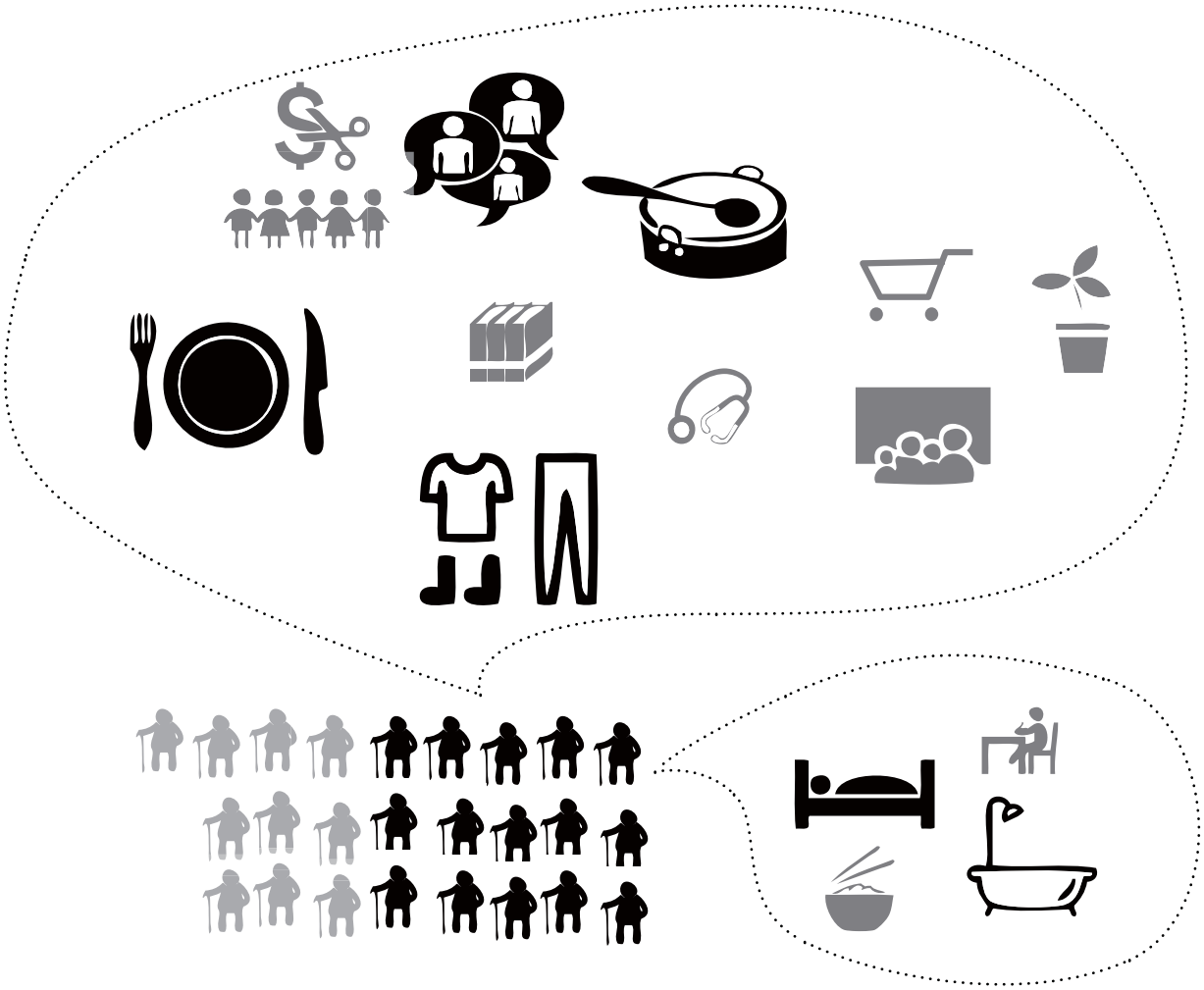
Source: United Nations Population Division, World Population Prospects: The 2004 Revision (New York: United Nations, 2005).



Data as at May 31, 2011. Source: United Nations World Population Prospects.

INTRODUCTION

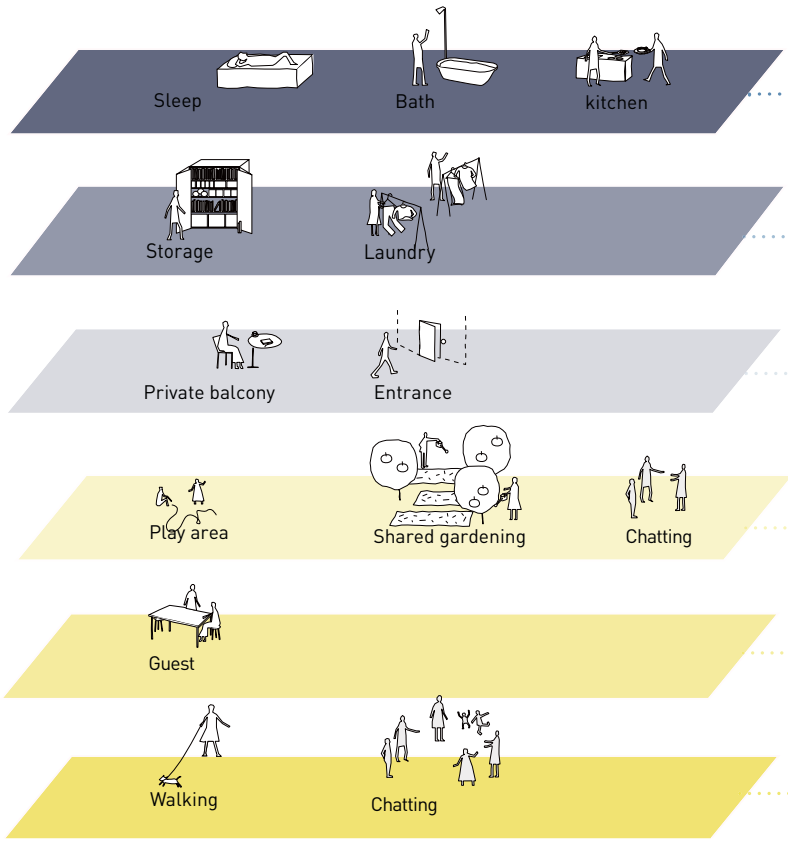
SOLUTION



SENIOR COHOUSING

Durrett, Charles. 2005. Senior Cohousing: a Community Approach to Independent Living - the Handbook. Berkeley, Calif: Habitat Press.

ORIGIN- TRADITIONAL CHINESE COURTYARD



Private space

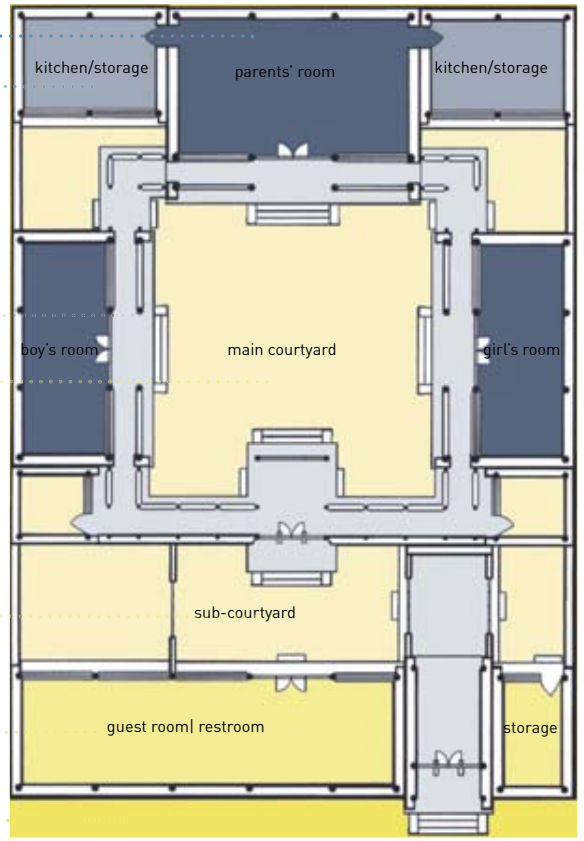
Closed Common space

Semi-open Private space

Open Common space

Closed Semi-public space

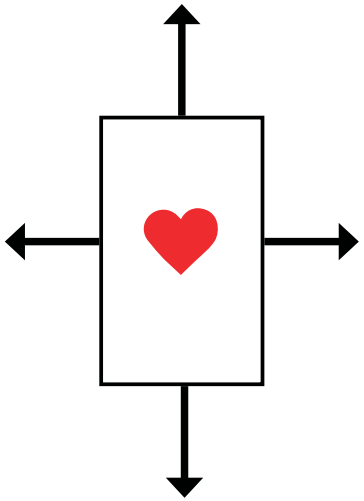
Public space

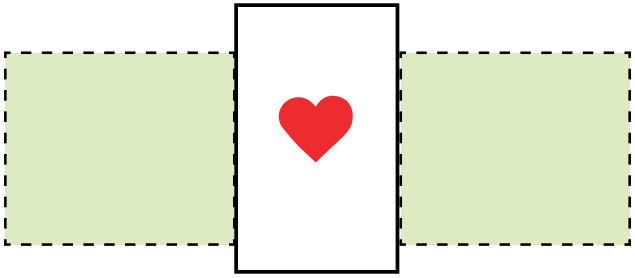


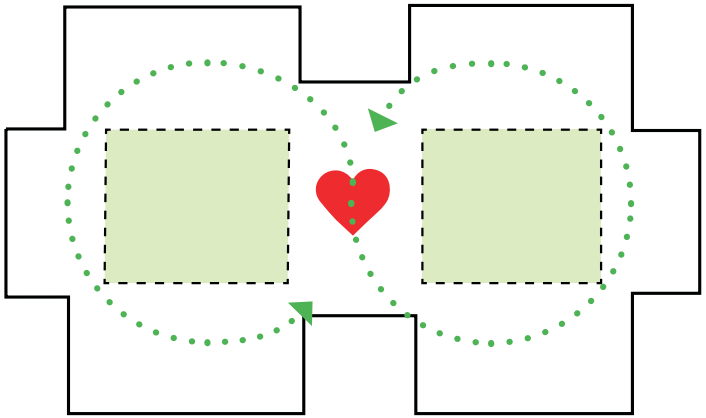
Private Public

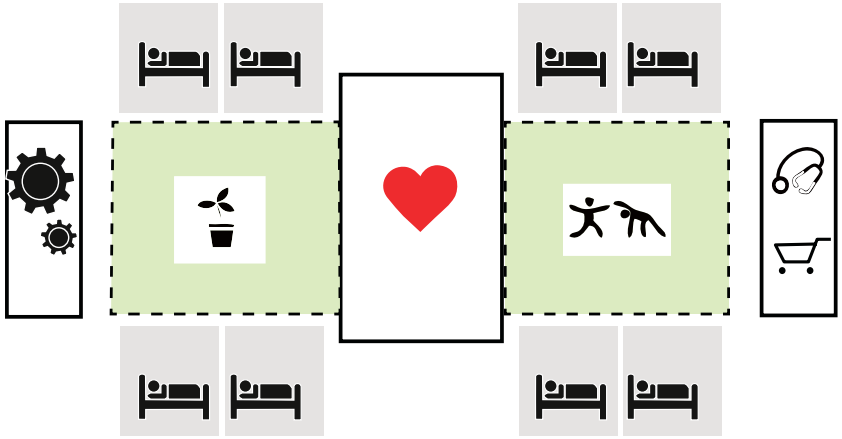
cooperative living in the traditional chinese courtyard

CONCEPT

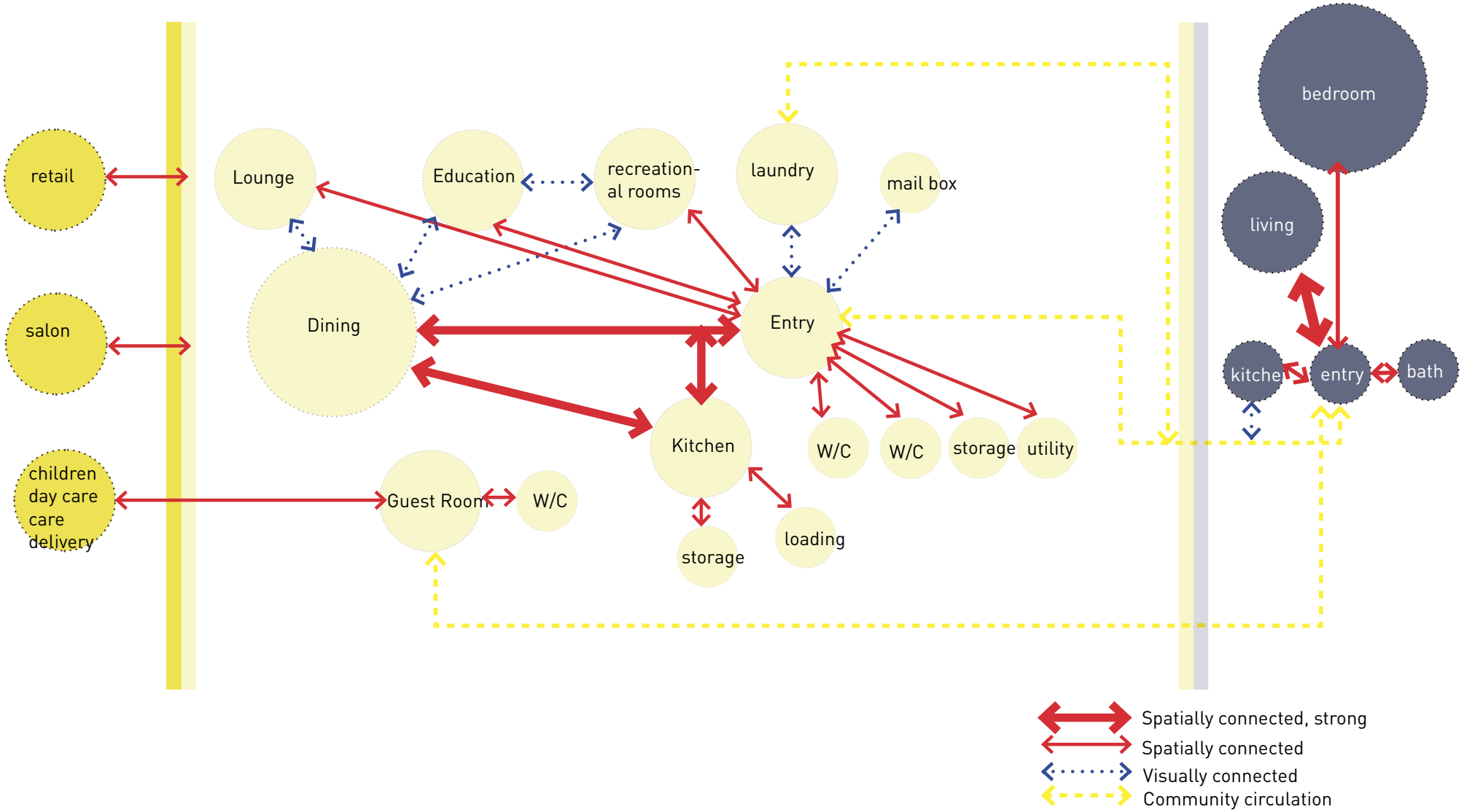




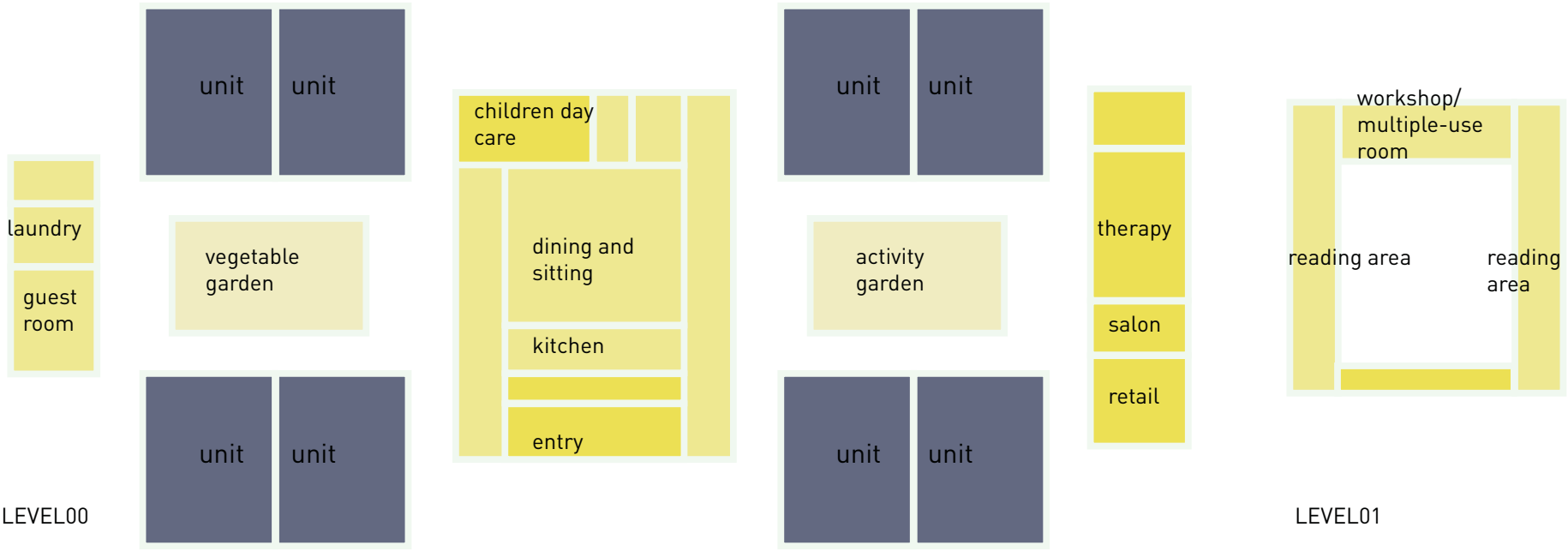




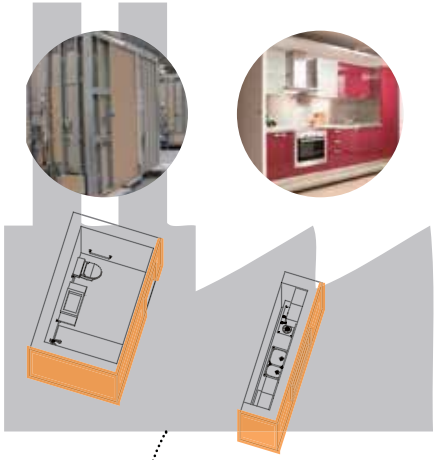
PROGRAM


retail
salon
children day care care delivery
Lounge
Education
recreation-al rooms
laundry
mail box
Dining
Entry
Kitchen
W/C
W/C
storage
utility
Guest Room
W/C
storage
loading
bedroom
living
kitchen
entry
bath
Spatially connected, strong
Spatially connected
Visually connected
Community circulation

LAYOUT ARRANGEMENT

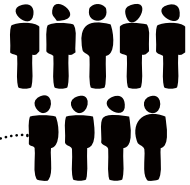


PREFABRICATION AND CONSTRUCTION

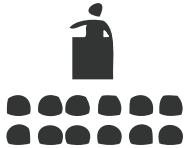


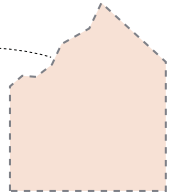
PREFABRICAT-
ED BATH AND
KITCHEN MANU-
FACTURED IN
FACTORIES

DELIVER TO SITE

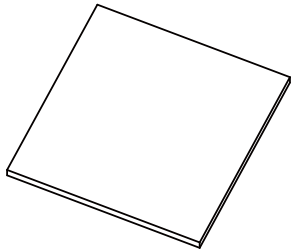


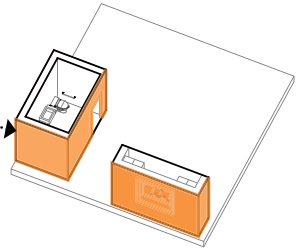
LOCAL RESIDENTS
GET TRAINED, AND
CONDUCT THE
REST CONSTRUC-
TION ON SITE

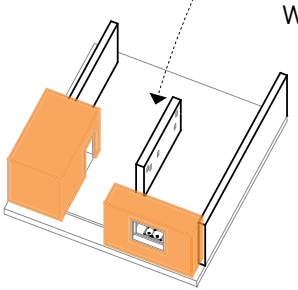


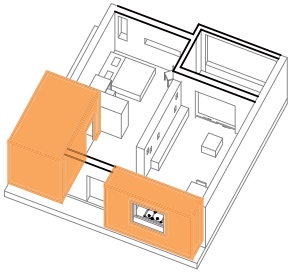


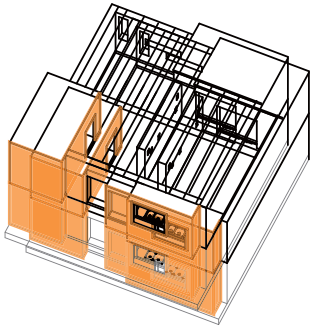
BRICK RECYCLED
FROM THE OLD
BUILDING TO BUILD
TO THE RADIANT
WALL

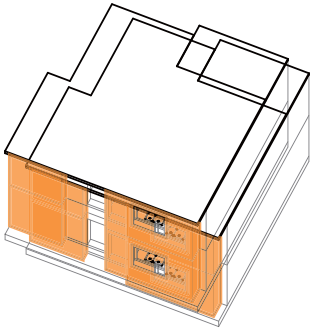


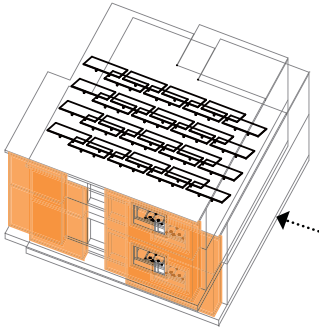








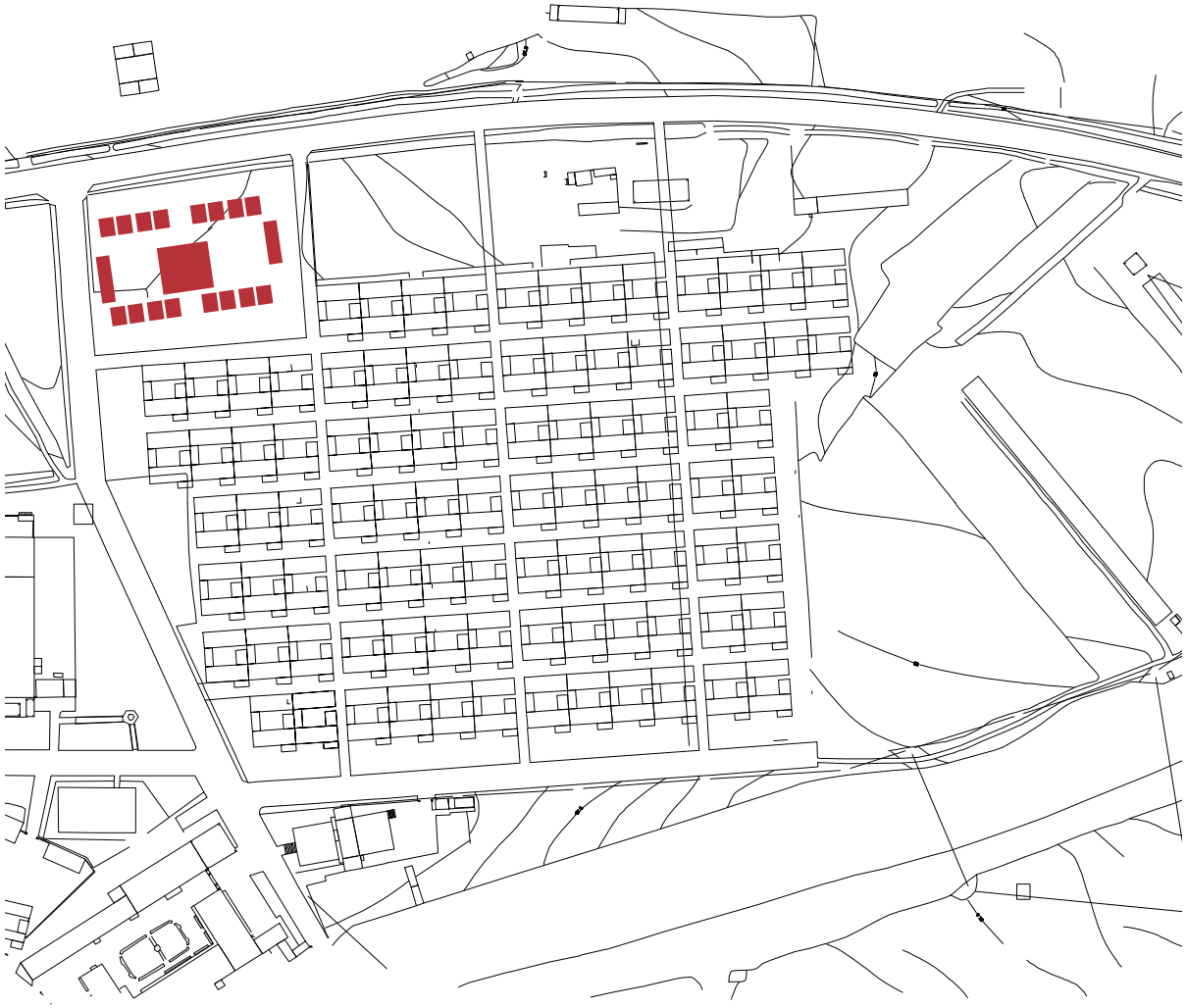




ELDERLIES
MOVE IN

source:
http://www.khss.com/how-we-do-it/prefabrication/
http://www.bathsystem.com/english/cucine_prefabbricate/cucine_prefabbricate.htm

VARIATION



EXISTING VILLGAE

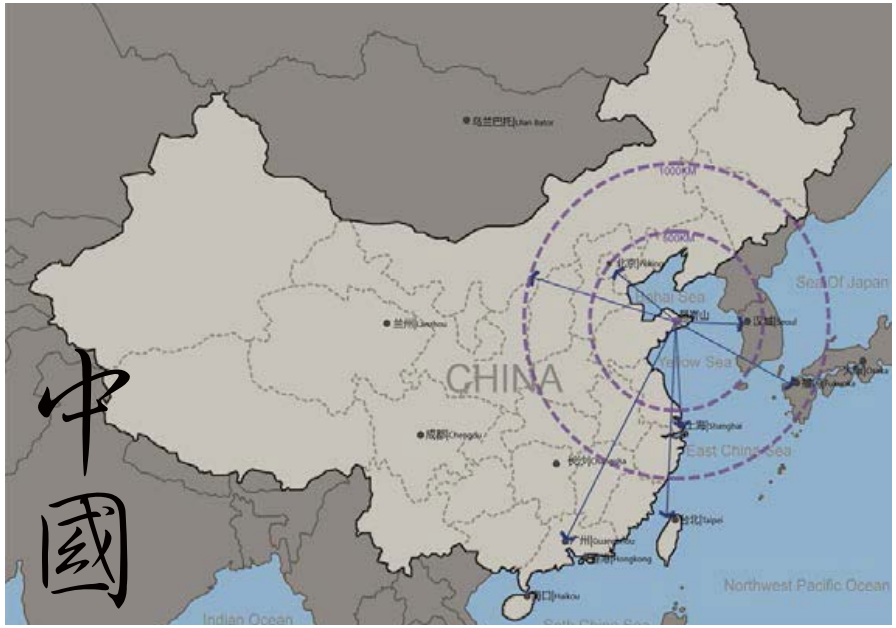
ELDERLIES MOVE IN

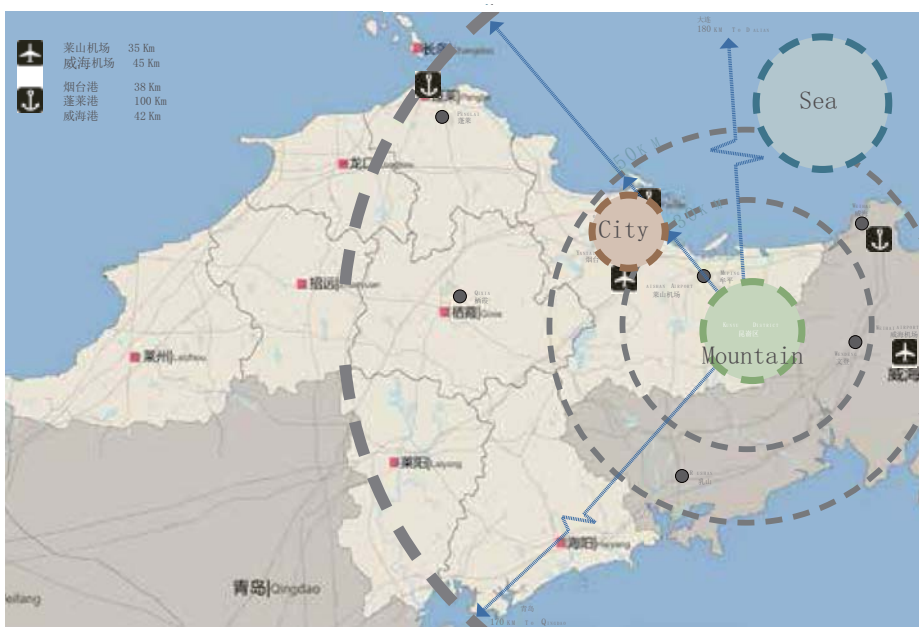
VARIATION

PROPOSED DESIGN BY LOCAL PLANNING DEPARTMENT

FAR:1.2

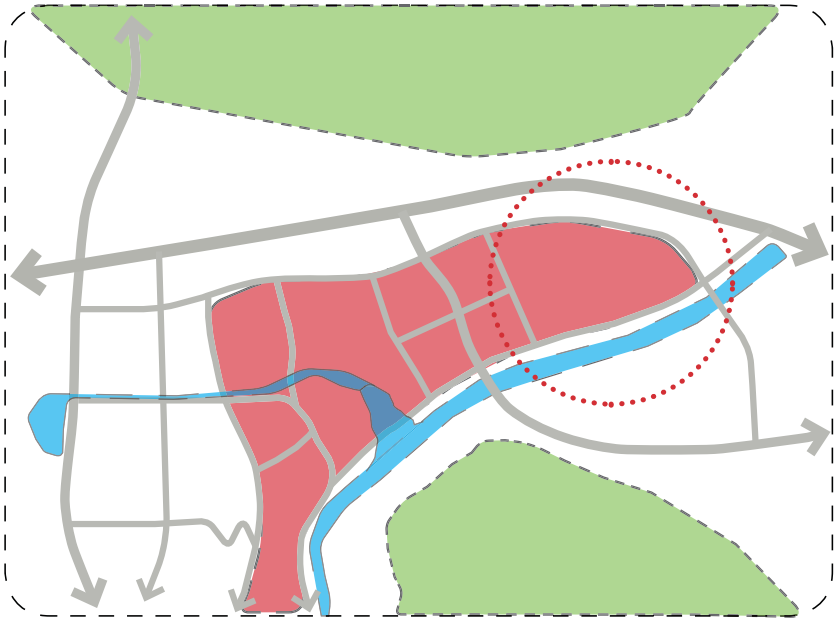
SPECIFIC SITE



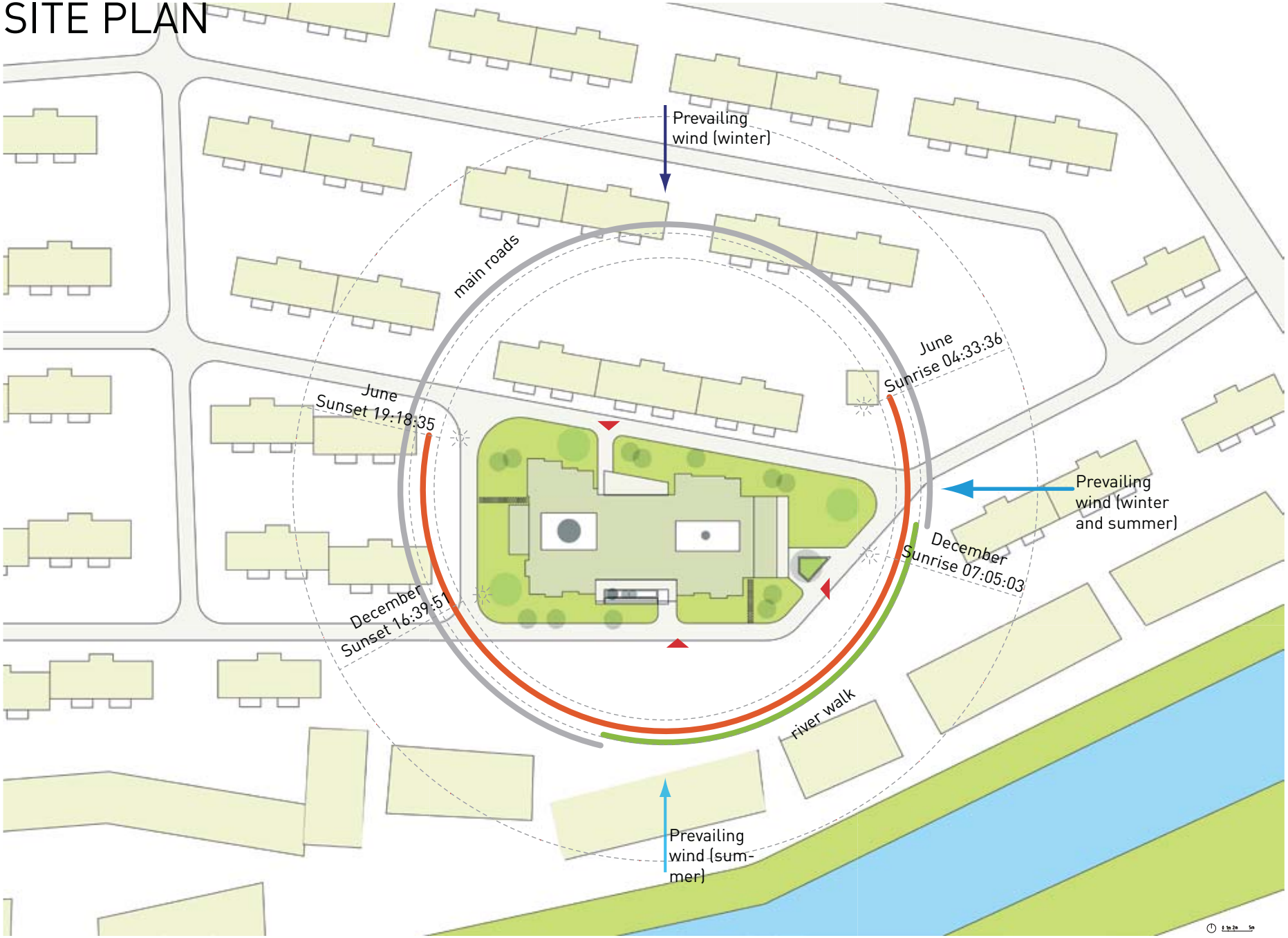


Kunyu Mountain [Location]
Latitude: 37 12‘ 20“ N
Longitude: 121 37‘ 00“ E
Altitude: 0-50 m

	Min	Max	Ø
Ta	-16.6	28.7	8.7
X	0.7	21.4	6.9
Gh	0.0	489	19.8



SITE PLAN


Prevailing
wind (winter)
main roads
June
Sunset 19:18:35
June
Sunrise 04:33:36
Prevailing
wind (winter
and summer)
December
Sunrise 07:05:03
December
Sunset 16:39:51
river walk
Prevailing
wind (sum-
mer)

LEVEL 00

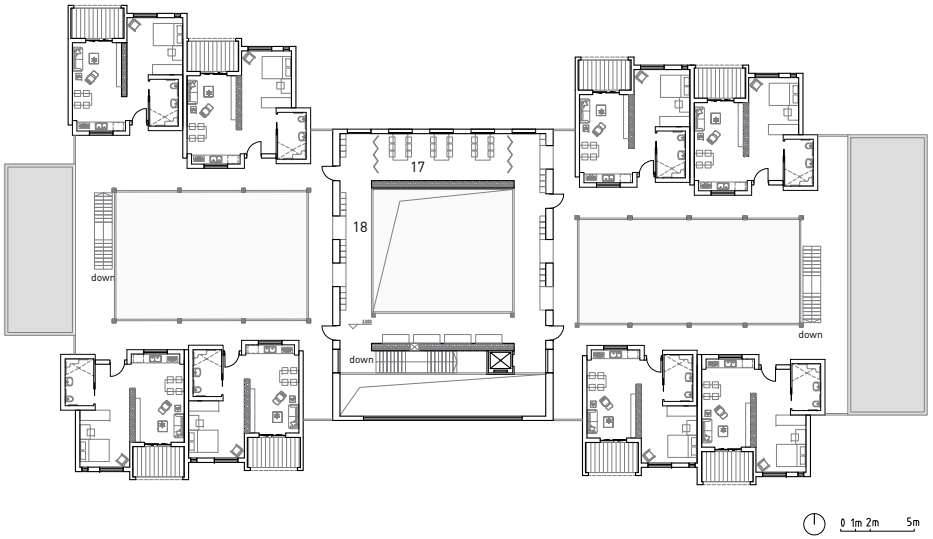
1. Entry
2. Reception
3. Mail
4. Common kitchen
5. Common dining
6. Cards/Majiang
7. Sitting
8. Children care
9. Mechanical room
10. Retail
11. Salon
12. Therapy
13. Laundry
14. Guest room
15. Plant garden
16. Sports garden

MAIN ENTRANCE AT SOUTH

COMMON HOUSE LEVEL 00 INTERIOR

COMMON HOUSE LEVEL 01 INTERIOR

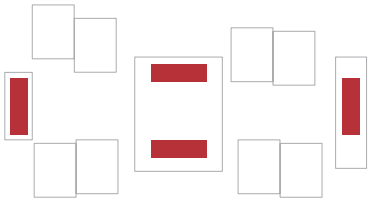
LEVEL 01

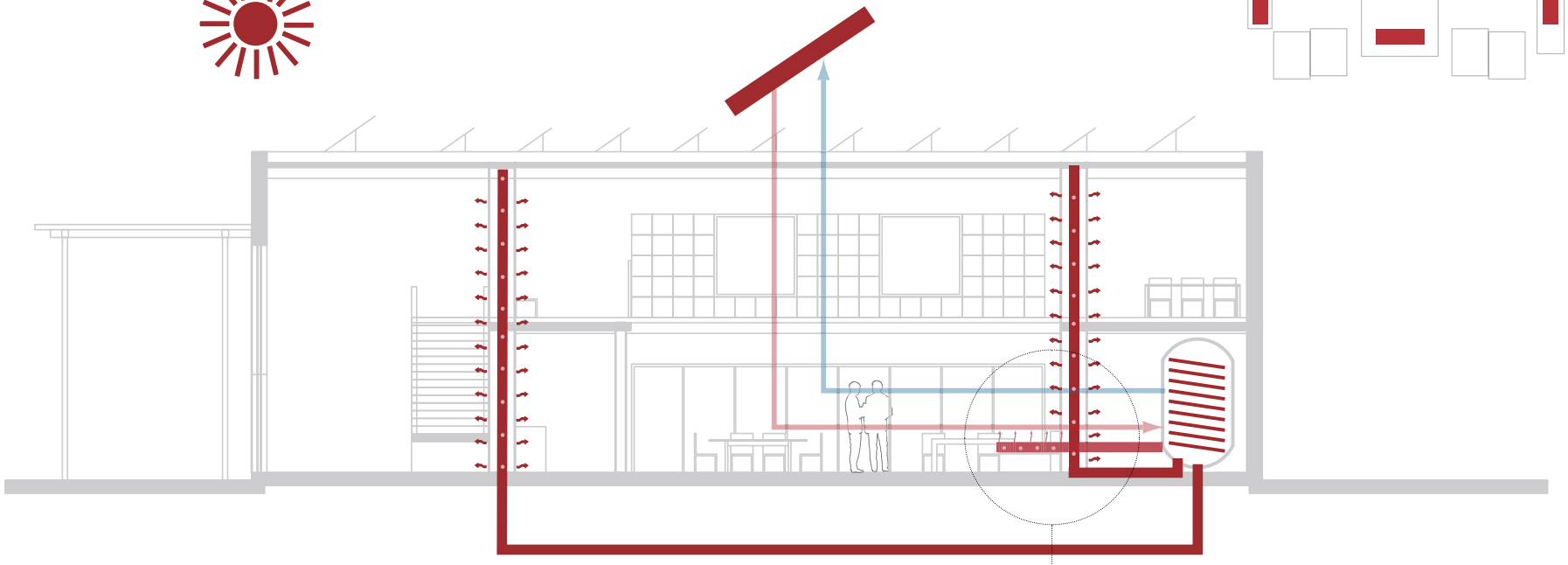


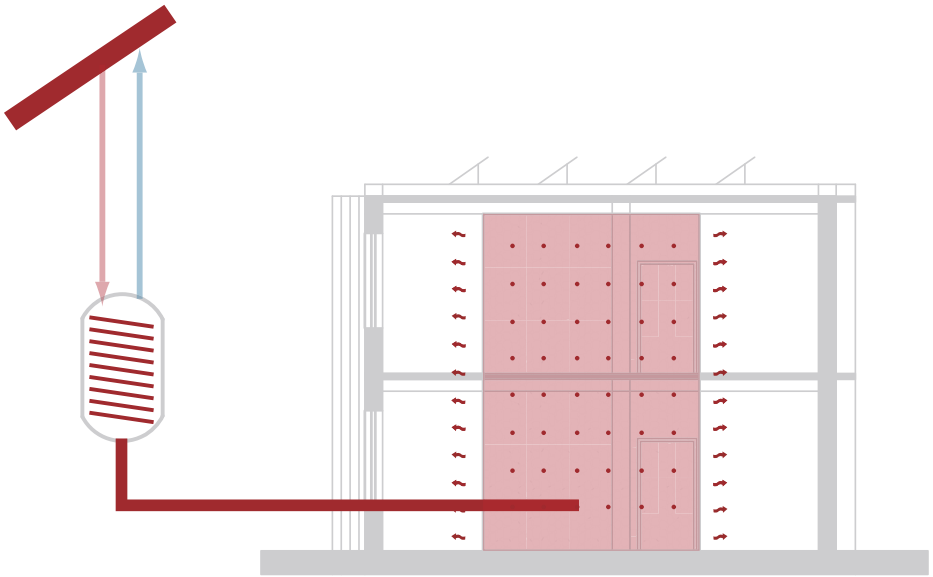
17. Workshop/ craft/ multiple-use room
18. Reading

SPORTS GARDEN

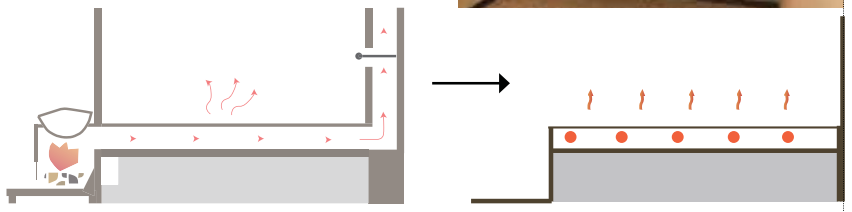
ENERGY CONCEPT-HEATING



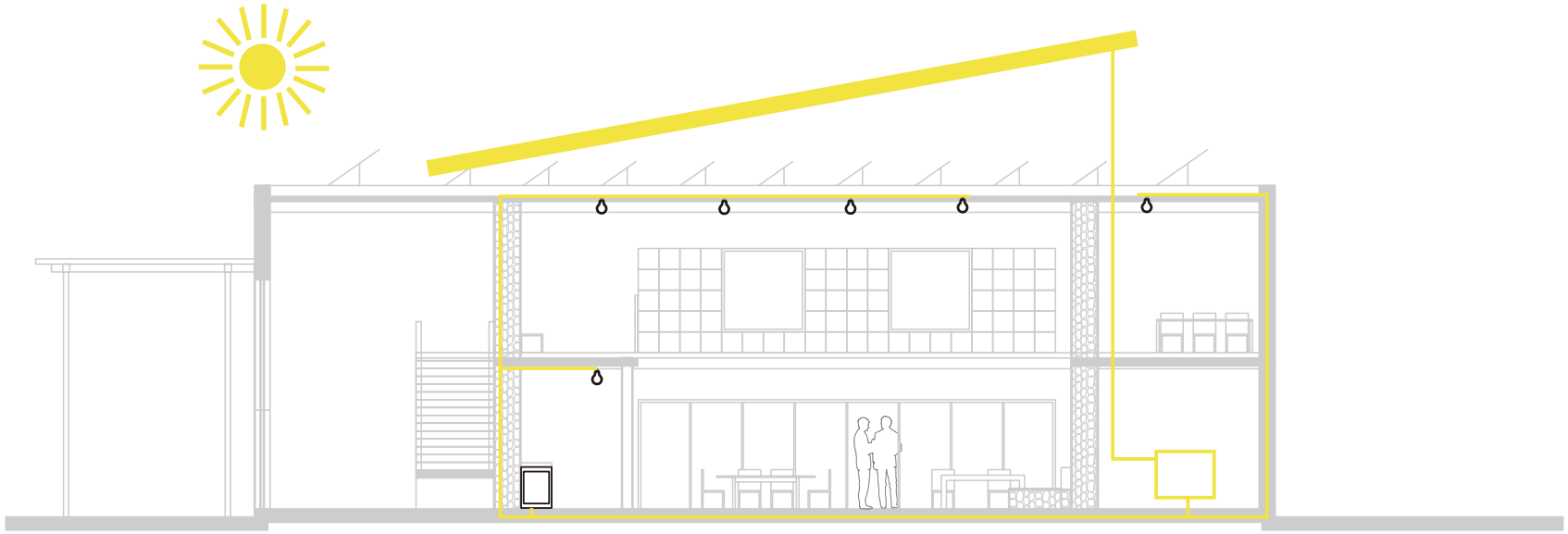


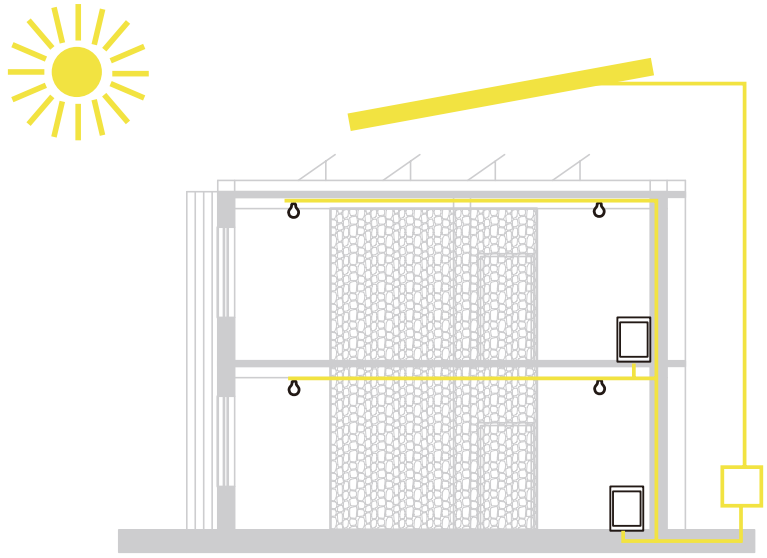


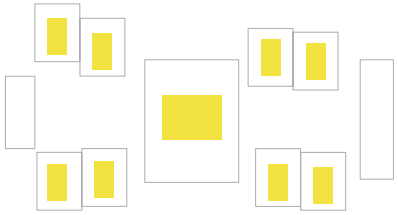
VERNACULAR HEATING METHOD



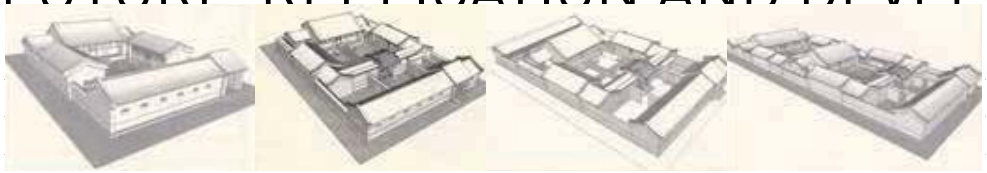
ENERGY CONCEPT-ELECTRICITY

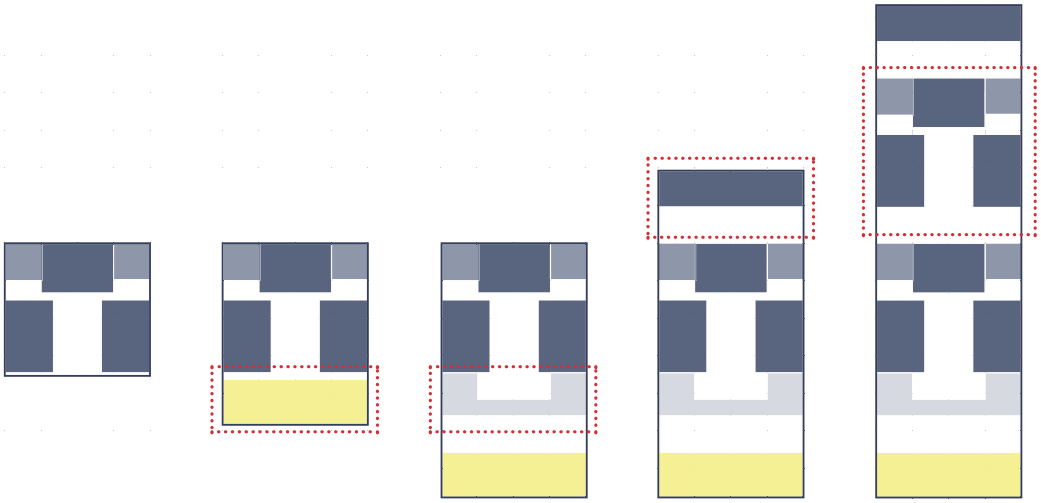


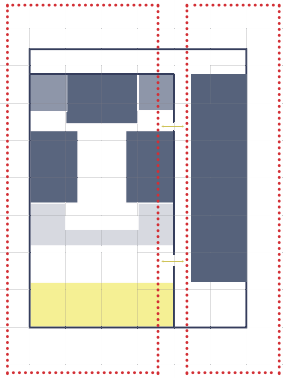


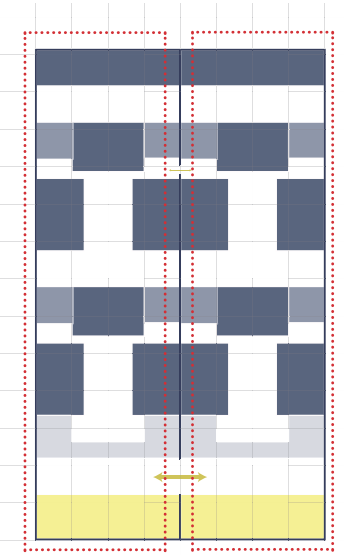


FUTURE-REPLICATION AND DEVELOPMENT

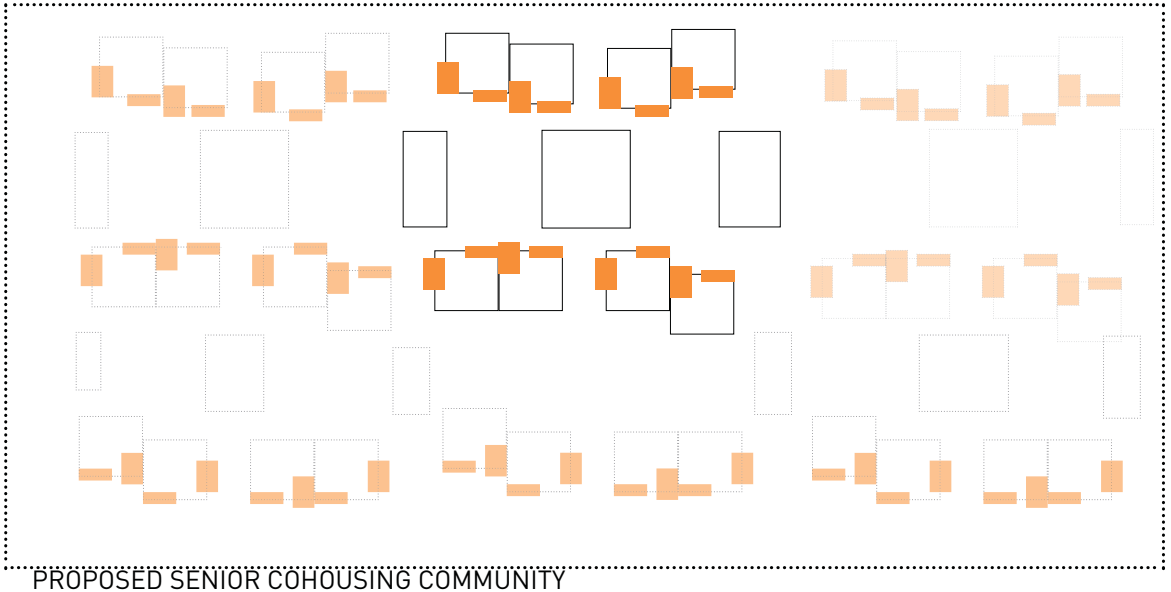








TRADITIONAL CHINESE COURTYARD HOUSE



PROPOSED SENIOR COHOUSING COMMUNITY