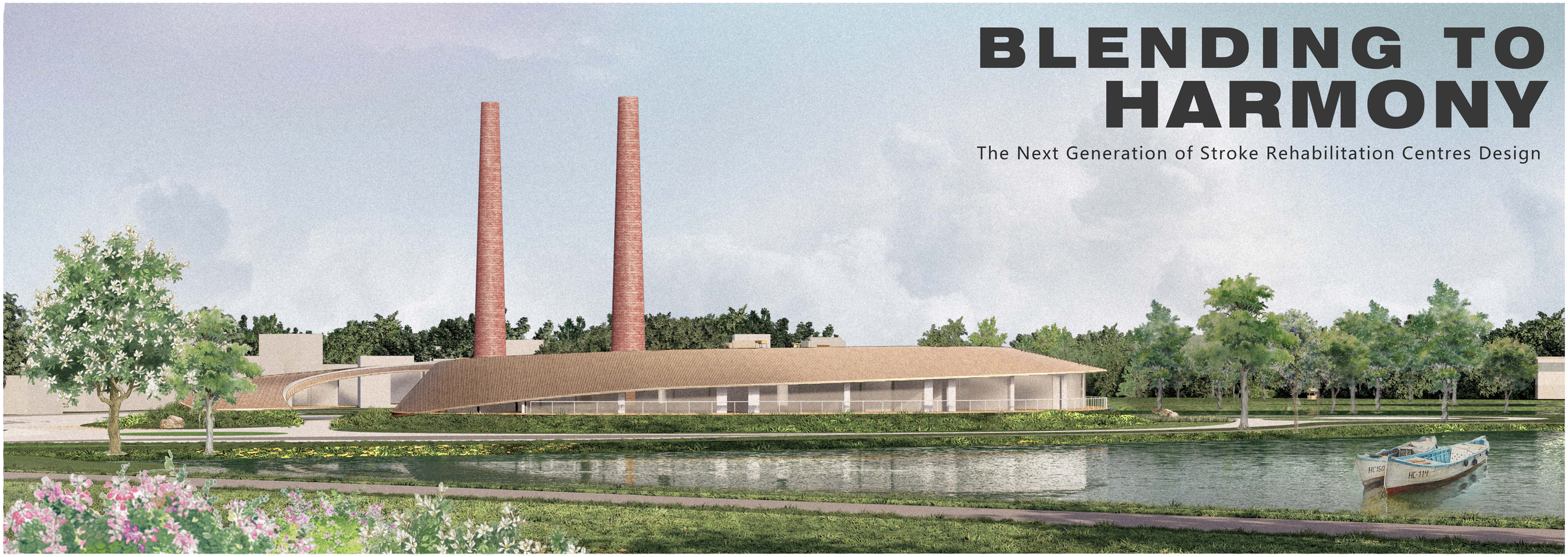
BLENDING TO HARMONY

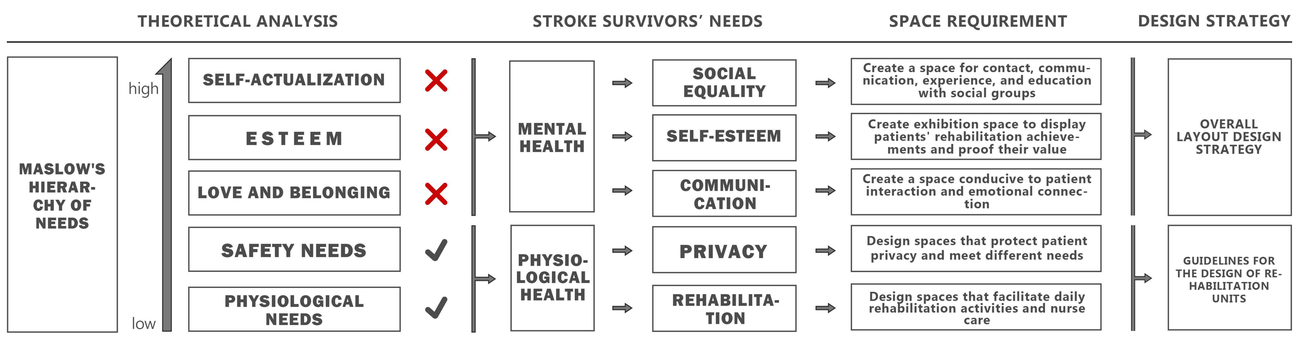
The Next Generation of Stroke Rehabilitation Centres Design



CONCEPT ANALYSIS

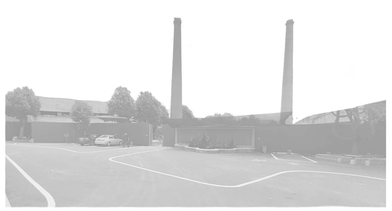
In Maslow's need theory, he divides human needs into five levels: physiological needs, safety needs, love and belonging, self-esteem and self-actualization. The five levels rise in succession. At present, most rehabilitation centers still only focus on basic physical needs and safety needs, and lack attention to patients' psychological and higher needs.

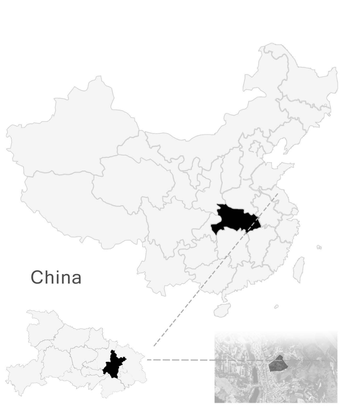
Therefore, as the next generation of rehabilitation centers, we should pay more attention to the psychological and higher level needs of stroke patients, while ensuring that the basic level needs are fully satisfied, through the design of space and function, to create a humanized, diversified, warm and comfortable rehabilitation space for patients.

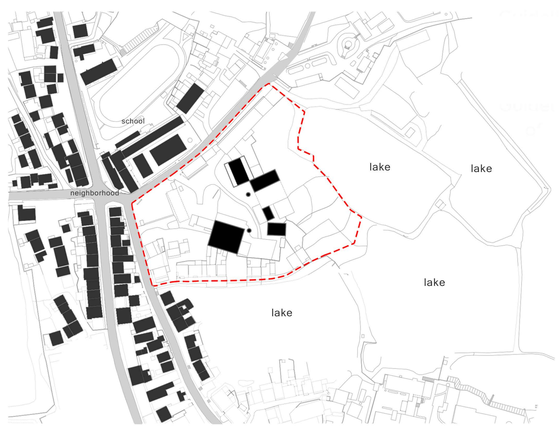


LOCATION ANALYSIS

The site is located in the southwest of Wuhan City, Hubei Province, China, in a suburban area. The original site of the site was a ceramic factory, with a residential community on the northwest side, serving both commercial and educational functions.The northeast side is an industrial park, and a new health center is planned to be built.There are large lakes distributed on the east and south sides, providing a good landscape view. The site is connected to the urban trunk road through the second-class highway on the north side of the four sides.







DESIGN GUIDELINE

GUIDELINES FOR THE DESIGN OF REHABITATION UNITS FOR STROKE SURVIVORS

- **Physical rehabilitation**
  - Bed activity
    - Patients need a quiet living environment, and noisy noises will lead to fatigue of the brain [2]
    - Patients in bright rooms needed 22 percent fewer painkillers than those in dark rooms. Patients in bright rooms also spent less time in the hospital than those in dim rooms. [3]
    - Patients who had access to nature experienced less pain and had faster recovery times. [3]
    - The reflection of the ground will bring glare, so try to choose frosted material as the ground material, and pay attention to the position of the bed [4]
    - The interface of public activity space is too smooth and hard materials such as ceramic tile, metal plate, etc., which lacks sound-absorbing treatment. The noise produced by TV, telephone and caller is difficult to eliminate, which is easy to make the elderly appear indifferent, agitated and other negative states. [5]
    - Sound or music close to nature (such as the sound of running water, birdsong, etc.) can help patients relax and reduce anxiety [6]
  - Under-bed activity
    - Going out for a walk is conducive to relieving patients' mood and reducing negative emotions in life [2]
    - A simple home living place (kitchen, laundry room, etc.) in the rehabilitation unit can promote patients' autonomous housework and help patients recover their physical functions [1]
  - Traffic activity
    - Room entrance, toilet and corridor need relatively wide traffic space to meet the needs of wheelchair access [1][2]
    - Patients with poor physical functioning perform most of their rehabilitation and daily activities in bed, requiring adequate access to the bed for medical staff and equipment such as wheelchairs
    - The interior corridor layout makes the corridor long and dark and lacks recognition, which will increase the anxiety tendency of patients to a certain extent [2][4]
    - Reducing the distance between outdoor space and patients' living area can promote patients' independent outdoor activities to a certain extent[4]
  - Medical care
    - The nurse station near the ward is better able to monitor and notice the problems and risks that may occur to patients, and the room farther away from the head nurse may have greater security risks [2]
    - Low-density nursing environment can bring significant positive therapeutic effects to patients [6]
- **Privacy protection**
  - Bed activity
    - In multiple rooms, patients with low physical function need to set up the necessary shade to protect the privacy of patients while recovering or other activities in bed
  - Under-bed activity
    - When privacy protection is achieved by separating rooms, attention should be paid to ventilation, lighting, space depression and other aspects. Patients tend to choose low height and movable separated objects [1]
    - Different patients have different needs for single and double rooms, so it is not suitable to make a blanket cut [5]
  - Medical care
    - The nurse station should not be too institutionalized or conspicuous, which will strengthen patients' sense of being monitored.
- **Provides communications and belongings**
  - Social activities
    - Some small corners located in corners or traffic Spaces can significantly promote communication and contact with patients [1]
    - Setting space levels with different privacy is conducive to meeting patients' different space needs (private, semi-private, semi-public, public) [1]
  - Individual activity
    - The overly unified and stereotypical design and management of the entire rehabilitation center is not conducive to the formation of a cordial sense of belonging for patients [5]

REFERENCE

[1] Study on Environmental Behavior and Spatial Structure of Elderly Care Facilities (2012)
[2] Does the physical environment matter? - A qualitative study of healthcare professionals'experiences of newly built stroke units (2021)
[3] Pain in its environmental context: Implications for designing environments to enhance pain control (2008)
[4] Healing environment: A review of the impact of physical environmental factors on users (2012)
[5] Research on the Design of Healing Space Environment in nursing institution for the elderly with dementia
[6] Guidelines for Adult Stroke Rehabilitation and Recovery
[7] Impact of the Design of the Built Environment on People with Dementia: An Evidence-Based Review
[8] Exploring liminality in the co-design of rehabilitation environments

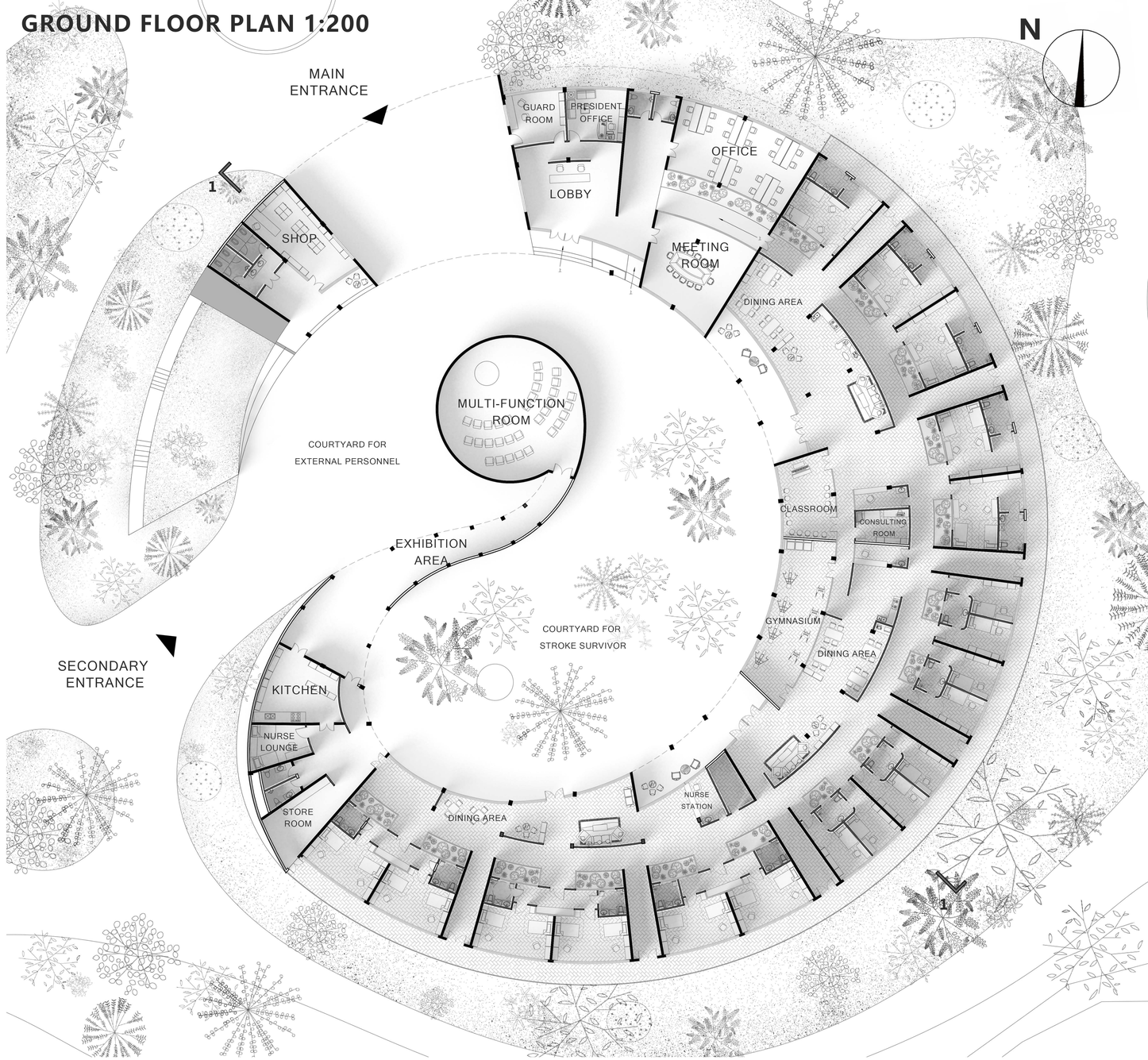




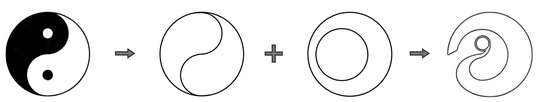




GROUND FLOOR PLAN 1:200



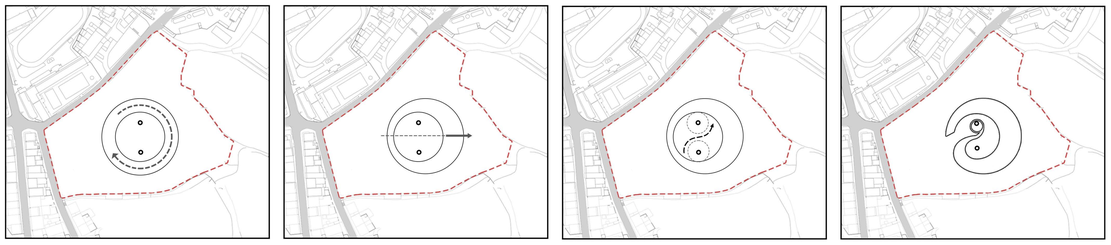
INSPIRATION SOURCE



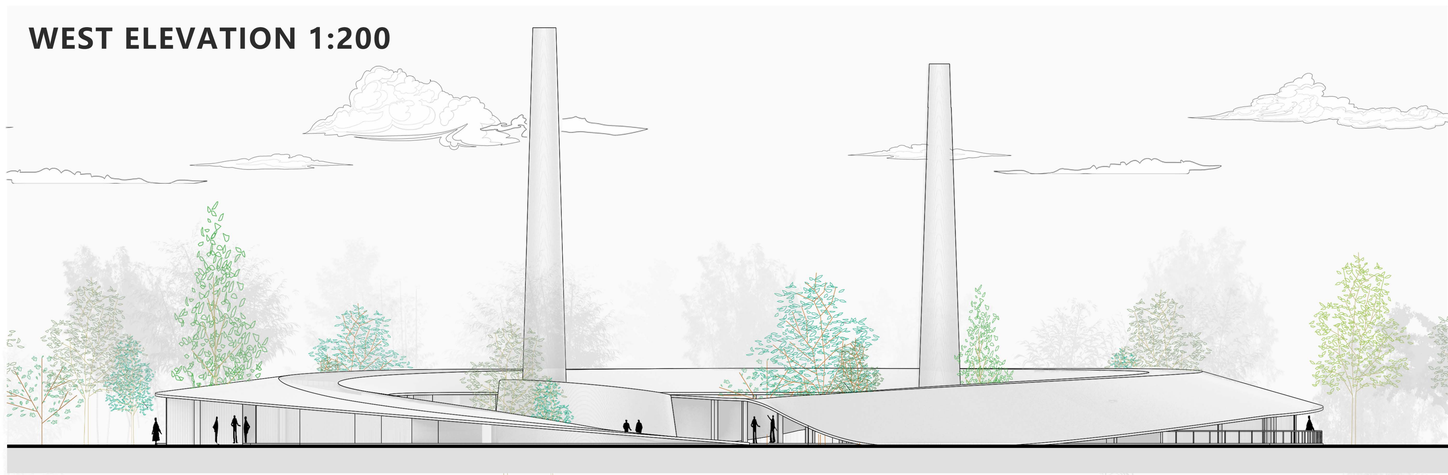
***T**ao Te Ching*, the masterpiece of eastern philosophy, mentioned that,

"All things bear the 'negatives (Yin)' and embrace the 'positives (Yang)' to become harmonious by blending two forces."

it is innovatively reinterpreted into a healthy-diseased combination of spaces generated by two courtyards centered on the original two chimneys on the site. We hope that, the healthy people from the society and the patients from the rehabilitation center can communicate with each other and understand each other through two separate but closely integrated courtyards. While eliminating social discrimination, let patients gain self-esteem, let each patient realize the transformation from negative to positive, from loneliness to companionship, from illness to recovery.



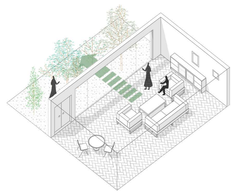
WEST ELEVATION 1:200



REHABILITATION UNIT DESIGN STRATEGY

ACCESSIBLE COURTYARD

- Patients who had access to nature experienced less pain and had faster recovery times. [3]
- Reducing the distance between outdoor space and patients' living area can promote patients' independent outdoor activities to a certain extent [7]
- Sound or music close to nature (such as the sound of running water, birdsong, etc.) can help patients relax and reduce anxiety [6]
- Going out for a walk is conducive to relieving patients' mood and reducing negative emotions in life [2]



Patients have easy access to nature

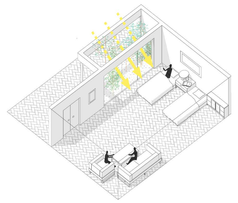
THE PLANTING PATIO

Noise control

- Patients need a quiet living environment, and noisy noises will lead to fatigue of the brain [2]

daylighting

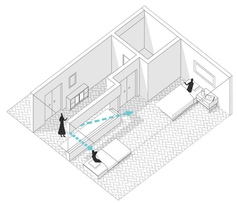
- Patients in bright rooms needed 22 percent fewer painkillers than those in dark rooms. [3]
- The interior corridor layout makes the corridor long and dark and lacks recognition, which will increase the anxiety tendency of patients to a certain extent [2][4]



The patio provides good lighting and sound insulation

MONITORING WINDOW

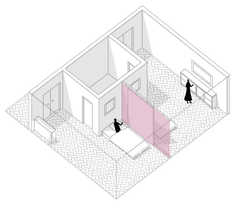
- The nurse station near the ward is better able to monitor and notice the problems and risks that may occur to patients, and the room farther away from the head nurse may have greater security risks [2]
- Studies have shown that the doors of stroke patients are closed most of the time, which is not conducive to nurse care and monitoring [2]
- For the nurses on duty and patrol at night, a certain rest space should be set up



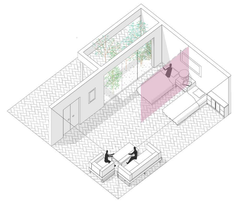
Caregivers can effectively monitor the status of four patients at once

DIVERSE TYPES OF CARE UNITS

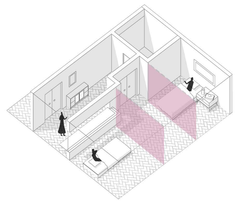
- In multiple rooms, necessary shielding should be set to protect the privacy of patients with low physical function when they are recovering or doing other activities in bed [2].
- Different patients have different needs for single and double rooms, so it is not suitable to make a blanket cut [5]
- The overly unified and stereotypical design and management of the entire rehabilitation center is not conducive to the formation of a cordial sense of belonging for patients [5]
- Patients with poor physical function carry out most of their rehabilitation and daily activities on the bed, which requires adequate space for medical staff and equipment such as wheelchair access [6]
- Patients need a certain sense of private domain for visiting, reading and other activity space [1]



Single room for mild cases
Flexible change to double room according to patient needs



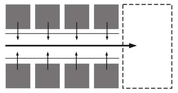
double room for mild cases
Meet the daily activities of mild patients.
Hanging curtain can easily achieve privacy protection



double room for intensive cases
The hanging curtain protects the privacy of the patient's bed activities.
Nursing Window provides an efficient way for caregivers to monitor patients at all times

INTERIOR LAYOUT

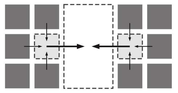
BEFORE



Linear Space

- The apathetic collectivized housing pattern
- Patients have limited access to the activity space
- Lack of transitional public space
- Have difficulty to build a sense of belonging and family

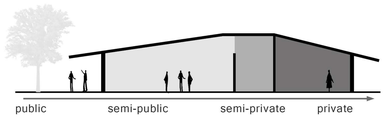
AFTER



Group Space

- Family living mode in groups
- Each patient has easy access to the activity space
- Multilevel public space
- Help patients communicate and build a sense of belonging

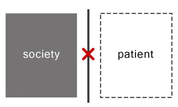
Public Space Rehabilitation Unit



- Low-density nursing environment can bring significant positive therapeutic effects to patients [6]
- For patients with poor physical function, they tended to choose a meal size of less than 15 people, and half chose less than 5 people. [1]
- Setting space levels with different privacy is conducive to meeting patients' different space needs (private, semi-private, semi-public, public) [1]
- Most patients tend to prefer a 2-3 person nursing unit that is best for 10 or less patients[1]

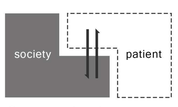
EXTERIOR LAYOUT

BEFORE

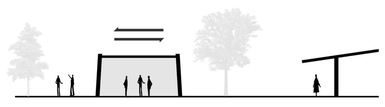


Isolated

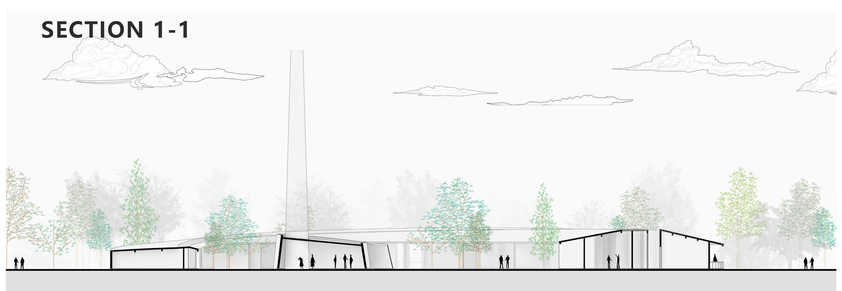
AFTER

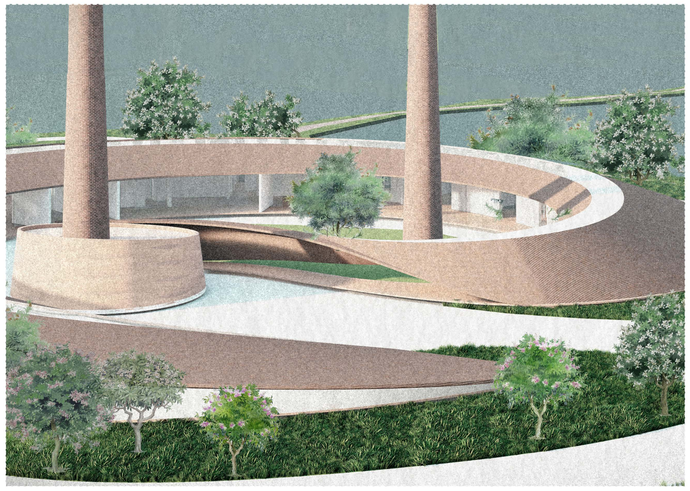


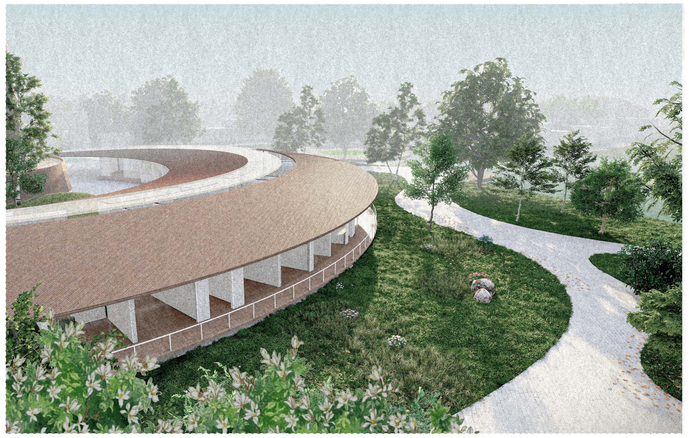
Communication



SECTION 1-1

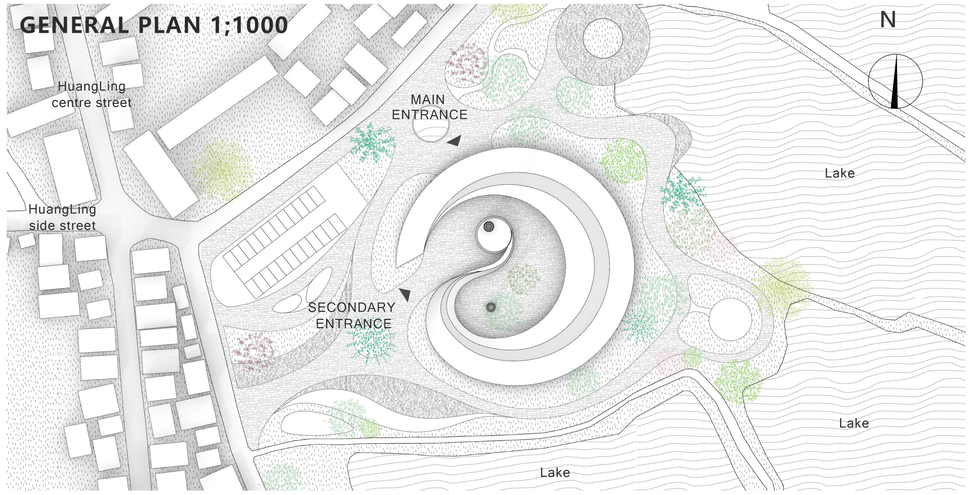




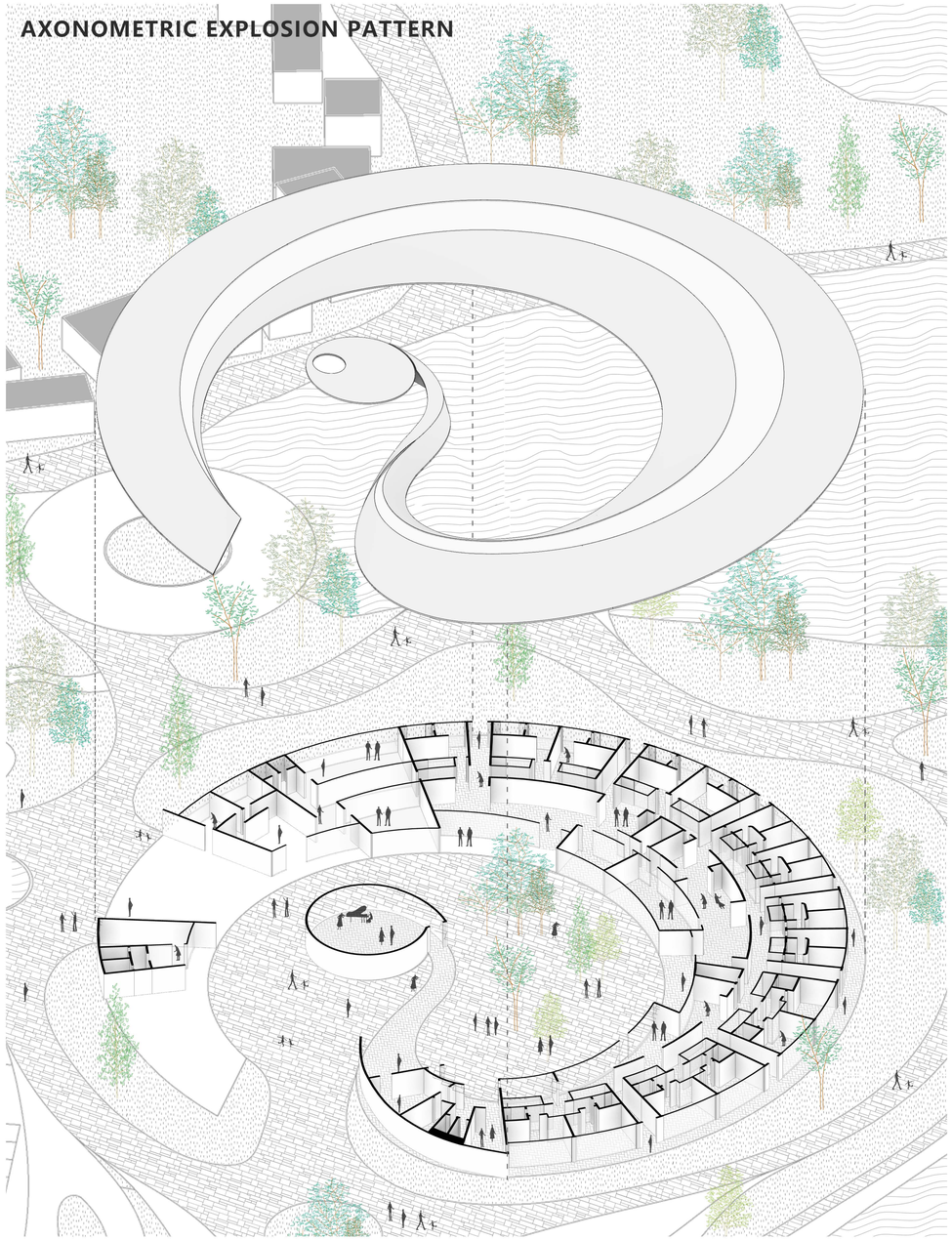




GENERAL PLAN 1;1000

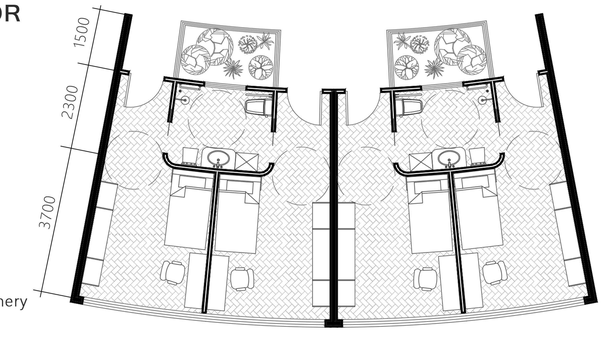


AXONOMETRIC EXPLOSION PATTERN





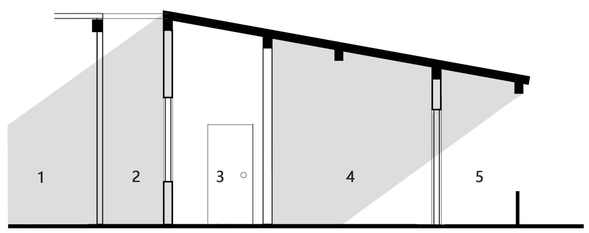
SINGLE ROOM FOR MILD CASES



1 movable partition wall
2 closet and cabinet
3 2m * 1m Single bed
4 public toilet
5 light patio filled with greenery

DOUBLE ROOM FOR INTENSIVE CASES

* The apartment is distributed on the southside and east side, using the floor-to-ceiling window of south side for lighting

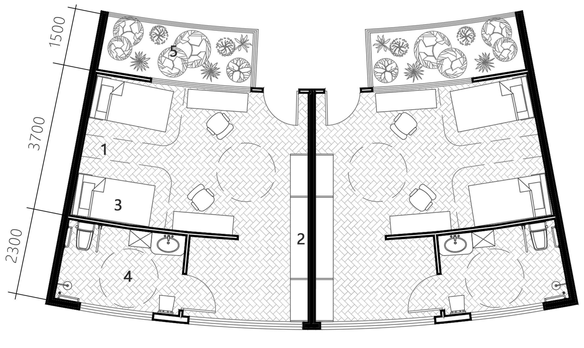


1 public space corridor
2 light patio filled with greenery
3 public toilet
4 living space
5 outdoor balcony





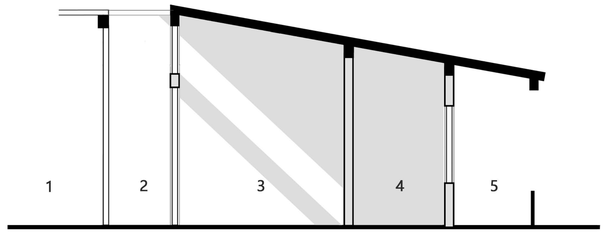
DOUBLE ROOM FOR MILD CASES



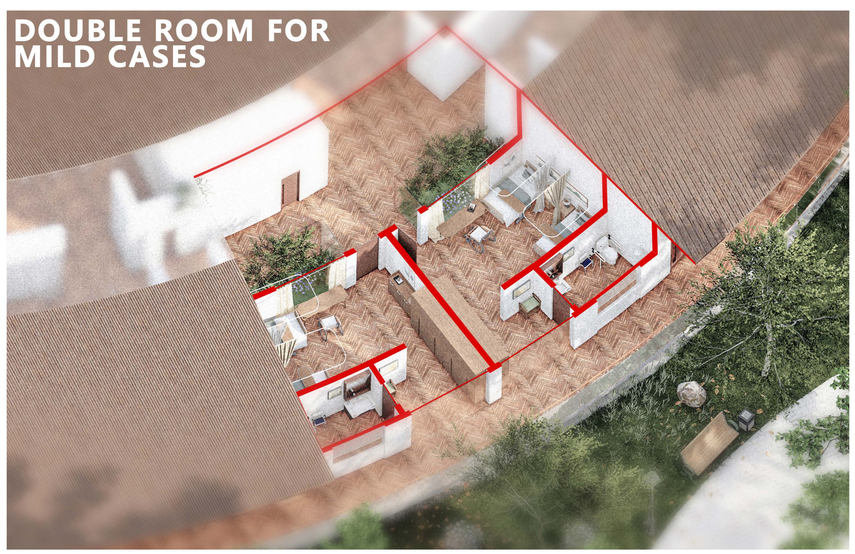
1 movable curtain
2 closet and cabinet
3 2m * 1m Single bed
4 public toilet
5 light patio filled with greenery

DOUBLE ROOM FOR MILD CASES

* The unit is distributed on the north side, useing the north side patio for lighting

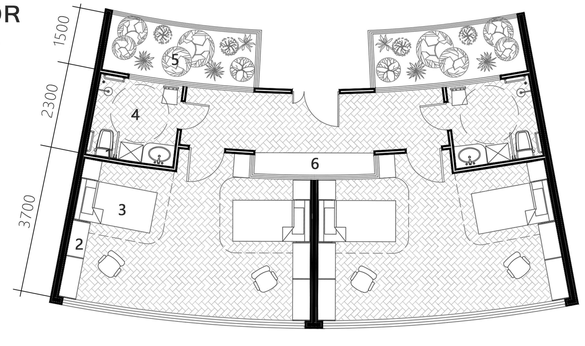


1 public space corridor
2 light patio filled with greenery
3 living space
4 public toilet
5 outdoor balcony





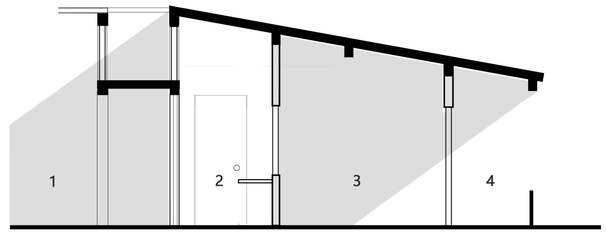
DOUBLE ROOM FOR INTENSIVE CASES



1 movable curtain
2 closet and cabinet
3 2m * 1m Single bed
4 public toilet
5 light patio filled with greenery
6 Nurse's desk

DOUBLE ROOM FOR INTENSIVE CASES

* The apartment is distributed on the south side, using the floor-to-ceiling window of south side for lighting



1 public space corridor
2 Nurse's desk
3 living space
4 outdoor balcony

