UIA Year of Design For Health
International Student Competition

NEXT GENERATION STROKE REHABILITATION CENTER

JURY REPORT

May 30, 2023

CONTENTS

1. INTRODUCTION

1.1 Description of the Competition

Definition of Health. Health, as defined by the World Health Organization (WHO), is “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity,” and “the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition” (WHO, n.d.).

2022: UIA Year of Design for Health. To respond to recent global health crises, including the COVID-19 pandemic and other devastating disasters, the UIA General Assembly in July 2021 declared "2022: UIA Year of Design for Health." This commitment urges all UIA Member Sections to encourage architects and their clients to use evidence-based design to promote health in buildings and cities, and promotes “Design that protects health, design that develops Better Health, and design that restores health once it is impaired.” The notion of Protecting, Developing, and Restoring Health is aligned with the WHO’s definition of health and can include two directions: (1) a project that protects, develops, and restores the physical, emotional, intellectual, or spiritual health of the parties; and (2) an approach to design that protects, develops, and restores the health of the parties, regardless of the building or project type (Pentecost, 2022). Therefore, Design for Health should be a fundamental component imbedded in every project, for every practice, and at any scale.

The NOVELL Project. To fulfil the mission of the UIA Year of Design for Health, the UIA and its Public Health Group are collaborating with NOVELL (Neuroscience Optimized Virtual Environments Living Lab) Redesign Team to organize this international student competition. NOVELL is a collaborative healthcare innovation project led by the Florey Institute of Neuroscience and Mental Health in Melbourne, Australia. This project aims to establish an evidence-based platform for rethinking how stroke rehabilitation facilities are designed and integrated into new models of care and redevelop and protect patients’ health and wellbeing. The project considers current best practice guidelines and applies rigorous user co-design, research, and evaluation approach to generate new knowledge and important evidence for future health design.

1.2 Goals of the Competition

This competition aims to encourage architecture and design students interested in design for health, and to advance innovative ideas and futuristic concepts to solve current challenges identified by brain injured (stroke) patients, family members, and medical staff. We believe that buildings and surrounding environments have potent influences on these vulnerable individuals and their caregivers.

1.3 Type of Competition and Eligibility

This was an open, one-stage project student competition. The competition was open to full-time university architectural students from all over the world. Multidisciplinary teams were encouraged. However, only architectural students could serve as team leaders or authors. Full-time university students from other disciplines, including interior design, landscape architecture, urban design, urban planning, medicine, neuroscience, psychology, and others, could be co-authors or team members acting as specialists. All team members (authors, co-authors, specialists) must be enrolled as university students by the time of the project submission to the competition website. Each team may have 1 to 5 university students, with 1 or 2 advisors. Having an advisor for this competition is not mandatory. Advisors must be named as consultants. A student or team of students was only allowed to submit one proposal. Regarding team projects, the student was only allowed to join one team. An advisor was only allowed to serve one proposal/project. Students, associates, employees, and family members of jury members and people involved in the preparation of this competition were not allowed to participate in the competition.

1.4 Evaluation Criteria

The following were the Evaluation Criteria in no order of importance：

- Creative approach
- Quality of architectural design
- Innovation regarding how the built environment supports stroke survivors' experiences
- Addressing the NOVELL Aspects of Design
- Adequacy of the proposal/program
- Feasibility and functional aspects
- Pertinence over an overall concept

The jury had the right to expound the above criteria during the evaluation process.

1.5 UIA Endorsement and Legal Framework

This one stage project Competition has been reviewed by the UIA international Competition Commission and endorsed by UIA. The competition was conducted according to the UNESCO Standard Regulations for International Competitions in Architecture and Town Planning and the UIA best practice recommendations (See: Competition Guide for Design Competitions in Architecture and Related Fields: https://www.uia-architectes.org/wpcontent/uploads/2022/02/2_UIA_competition_guide_2020.pdf)

1.6 International Jury

The following international jury evaluated the entries:

- **John Cooper**, Architect, UK, UIA Region I, Jury President
- **Fani Vavili-Tsinika**, Professor Emeritus, Aristotle University of Thessaloniki, UIA, Council member, UIA Representative, Greece, UIA Region II
- **Philip Patrick Sun**, Architect, USA, UIA Region III
- **Jane Repin Carthey**, Architect, Australia, UIA Region IV
- **Innocent Okpanum**, Architect, South Africa, UIA Region V

Alternate jurors:

- **Pei Ing Tan**, UIA Secretary General, UIA Representative, Malaysia, UIA Region IV
- **Henning Lensch**, Architect, Germany, Region I

The jury session was coordinated by Zhipeng Lu, member of the UIA-Public Health Group, and the coordinator of the Technical Committee.

John Cooper

Fani Vavili-Tsinika

Philip Patrick Sun

Jane Repin Carthey

Innocent Okpanum

Henning Lensch

Pei Ing Tan

1.7 Submission deadline

The date of competition submission deadline was originally April 15, 2023. It was changed to April 21, 2023.

2. JURY SESSIONS

2.1 Evaluation Process

The jury sessions took place on May 4, May 10, May 19, May 22, and May 24, 2024. The jurors met virtually through the Zoom teleconference platform.

According to the report of the technical committee:

- 177 entries were submitted before the deadline;
- 2 were duplicated submissions;
- 1 submission was with crashed files that could not be recovered (possibly with unsuccessful submission);
- 2 violated the requirement for anonymity;
- A large percentage of entries did not use the required scales for floor plans (1:100) or unit plans (1:50);
- Some entries did not fulfil all the presentation requirements (e.g., missing unit plans)

The jury noted the report of the technical committee. The jury decided to remove the 2 entries that violated the anonymity requirement but kept those that did not use the required scales or did not fulfil the presentation requirements in the evaluation. Eventually 172 entries were entered into the evaluation process.

2.2 Meetings and Evaluation Results of Each Round

- **Kick-off Meeting (May 4, 2023)**
  Attendees: John Cooper, Fani Vavili-Tsinika, Jane Repin Carthey, Innocent Okpanum, Philip Patrick Sun, Warren Kerr & Zhipeng Lu

  During this meeting, the jurors met virtually, introduced themselves, and got to know each other. The jurors discussed the detailed arrangement of the evaluation process and criteria.

- **First-Round Evaluation (May 10, 2023)**
  Attendees: John Cooper, Fani Vavili-Tsinika, Jane Repin Carthey, Innocent Okpanum, Philip Patrick Sun, Henning Lensch, Fei Qi & Zhipeng Lu

  Before the meeting, the coordinator downloaded all the entries from the UIA competition platform. He compiled all the documents into multiple PDF files, each of which contained 10-15 entries.

  During the Zoom meeting, the coordinator displayed all the entries through the shared screen. The jurors reviewed and discussed each entry according to the evaluation criteria.

  After the meeting, the coordinator uploaded the entries to a newly created Google Drive and shared them with the jurors. The jurors therefore had more time to study and evaluate the entries.

  After the first-round evaluation, 46 entries with following codes were selected to enter the next round: 3, 5, 10, 12, 19, 20, 26, 27, 30, 32, 38, 40, 41 44, 48, 50, 54, 79, 86, 97, 99, 102, 103, 104, 115, 119, 122, 124, 125, 127, 130, 132, 134, 138, 139, 142, 145, 146, 147, 150, 164, 166, 168, 169, 172, 175.

- **Second-Round Evaluation (May 19, 2023)**
  Attendees: John Cooper, Fani Vavili-Tsinika, Innocent Okpanum, Philip Patrick Sun, Henning Lensch, Fei Qi & Zhipeng Lu

  Note: Jane Repin Carthey was not able to attend the meeting due to the time zone confusion. Henning Lensch cast the vote during this session as an alternative juror.

  During this meeting, the jurors thoroughly discussed the remaining entries in greater details and short-listed following entries: 12, 20, 27, 32, 50, 54, 86, 99, 102, 103, 125, 127, 134, 139, 142, 164

- **Third-Round Evaluation (May 22, 2023)**
  Attendees: John Cooper, Fani Vavili-Tsinika, Jane Repin Carthey, Innocent Okpanum, Philip Patrick Sun, Henning Lensch, Fei Qi & Zhipeng Lu

  During this meeting, the jurors discussed and reviewed the short-listed entries and determined the top 4 prize winners and honorable mentions:

  - Top 4 prize winners: 27, 50, 103, 125
  - Honorable mentions: 12, 20, 32, 54, 99, 102, 142, 164

- **Fourth-round Evaluation (May 24, 2023)**
  Attendees: John Cooper, Fani Vavili-Tsinika, Jane Repin Carthey, Innocent Okpanum, Philip Patrick Sun, Henning Lensch, Brooke Parsons (stroke survivor, advisor to the jury), Fei Qi & Zhipeng Lu

  During this meeting, the jurors decided to add one prize winner, determined the winner for each prize, and finalized the results:

  - 1st Prize: 27 (South Africa site)
  - 2nd Prize: 103 (China Site)
  - 3rd Prize: 125 (South Korea Site)
  - 4th Prize: 50 (Cameroon Site)
  - 5th Prize: 12 (Japan Site)

  Honorable Mentions:
  20 (USA Site), 32 (UAE Site), 54 (Poland Site), 99 (Poland Site), 102 (China Site), 142 (Cameroon Site), 164 (Africa Site)

2.3 Prizes and Honorable Mentions

The total prize money available was EUR 12,500. The jury determined five prizes and seven honorable mentions.

The following amount of cash will be paid to the prize winners:

- 1st Prize: EUR 5,000 to #27
- 2nd Prize: EUR 3,000 to #103
- 3rd Prize: EUR 2,000 to #125
- 4th Prize: EUR 1,500 to #50
- 5th Prize: EUR 1,000 to #12

Certificates will be awarded to all prize and honorable mention winners. Novell Redesign will invite the prize winners to become co-researchers at Novell.

The prize money will be paid within 90 days of the result announcement through UIA Secretariat. Prize winners will be responsible for any taxes and/or charges incurred as per their countries' laws and regulations.

2.4 Remarks and Recommendations of the Jury

The jury was of the firm belief that this competition offered unparalleled opportunities for students all around the world to understand the 'design for health' concept, apply evidence-based design methodologies, and incorporate human-centered design principles. This competition also succeeded in amplifying global awareness about the significance of health as a crucial aspect of design practice. They were impressed by the quality of the submissions. The student teams demonstrated exceptional design and graphic abilities, and displayed meticulous attention to contextual, historical, cultural, and human factors. The jury identified excellent innovations that effectively tackled a variety of globally challenging issues.

Meanwhile, the jury noted a discernible shortfall in the incorporation of sustainability across the submissions. While sustainability was not explicitly stated as a requirement in the competition brief, it should naturally be integrated into each project, given the pressing issues surrounding global climate change. The jury also encouraged students to present a “whole story” about their designs regarding “where the project was located,” “who they were designing for,” “why they adopted specific approaches,” and “what made their design unique,” rather than simply arranging the drawings on presentation boards. In addition, the jury suggested students pay attention to site planning and landscape design, as outdoor environments significantly contribute to the health and safety of patients and healthcare staff.

- **First Prize Winner**
  The jury offered high praise for this exquisite design, remarking on its provision of culturally appropriate, economically feasible solutions for Xhosa stroke survivors in the Eastern Cape Province of South Africa, a region characterized by rural poverty and an extremely arid climate. The design artfully harnessed the natural landscape, light, and ventilation to create therapeutic spaces. Public areas within the facility were transformed into cultural showcases that nurtured social interactions and provided positive distractions. The patient unit was designed thoughtfully with options for one-bed, two-bed, and three-bed rooms. Each bed was granted convenient access to the bathroom and common living area, as well as exposure to natural light and outdoor views.

- **Second Prize Winner**
  This design adopted a modular and prefabrication approach, effectively providing viable and adaptable solutions that could be implemented anywhere in the world. It fostered a sense of community, vividly illustrating how stroke survivors could be cared for in a community setting. The jury appreciated the team's depiction of a user's daily use of the facility, which lucidly demonstrated their design intentions and the versatility of the unit designs. However, the jury also voiced concerns about some issues, including maintenance (cleaning and landscape upkeep) and wayfinding.

- **Third Prize Winner**
  The jury appreciated the concept of a centrally located water garden that delivered a therapeutic landscape for all stroke survivors. The idea of a water garden—with a grassy bottom—doubling as a conduit for natural light to illuminate the therapy pool directly underneath it in the basement, was deemed particularly innovative. In general, the design was thoughtfully crafted, though the jury pointed out that the outdoor spaces sandwiched between the two units might be too constricted to offer pleasant experiences.

- **Fourth Prize Winner**
  This design exemplified low-cost construction, leveraging vernacular architectural style and local materials. It was characterized by an elegant form and a simple, double-loaded corridor floor plan. The roof overhang offered shaded outdoor spaces and limited excessive direct sunlight to the indoors. The unit design was uniquely structured, with private bedrooms and bathrooms but a shared common living area. The jury remarked, however, the corridor on the north side might not be needed and some of the transportation spaces might be oversized.

- **Fifth Prize Winner**
  This design introduced small-scale, decentralized care clusters that forged cozy, homelike atmospheres for stroke survivors. The compact size of each unit may facilitate ease of movement for stroke survivors and could foster closer personal relationships between the care staff and stroke survivors. The outdoor landscaping, interior design, and detailing of the units were commendable. Nevertheless, the jury pointed out that certain aspects and details might not be suitable for stroke survivors, such as the floor seating and the outdoor pool with steps, though there were some drawings illustrating how they could be used by stroke survivors.

3. INTERNATIONAL PARTICIPATION

749 teams from over 100 countries registered for the competition, among which 175 teams from 40 countries submitted their projects. The participating countries and the related number of submissions are listed below:

China	46	Nigeria	2
Russia	21	Turkey	2
Poland	14	Australia	1
USA	10	Austria	1
Kyrgyzstan	9	Cyprus	1
Indonesia	7	Denmark	1
Greece	6	Finland	1
Romania	6	Ghana	1
Cameroon	5	Iran	1
Portugal	5	Italy	1
Brazil	3	Kenya	1
Egypt	3	Philippines	1
Ethiopia	3	Slovakia	1
France	3	Sri Lanka	1
South Korea	3	Thailand	1
UK	3	Tunisia	1
Belarus	2	Uganda	1
Germany	2	UAE	1
Lebanon	2	Uzbekistan	1
Morocco	2	Viet Nam	1

4. ACKNOWLEDGEMENT

The jury extends heartfelt gratitude to the following individuals and organizations responsible for orchestrating and supporting this remarkable student competition. The profound impact of this competition will undoubtedly resonate in the years to come.

Organizers
Public Health Group of International Union of Architects (UIA-PHG)
NOVELL Redesign Team

Sponsors
International Union of Architects (UIA)
Australian Health Design Council

Organizing Committee
Competition Manager: Warren Kerr, Architect (Australia, UIA-PHG)
Coordinator: Fei Qi, Architect (China, UIA-PHG)
Maryam Banaei, Post-doctoral Researcher (Australia, NOVELL Redesign)
R. Chandrashekhar, Architect (India, UIA-PHG)
Nirit Pilosof, Architect (Israel, UIA-PHG)

NOVELL Redesign Team & its Collaborators
Ruby Lipson-Smith
Aaron Davis
Brooke Parsons
Anna Fox
Michelle Shannon

UIA-PHG Administration/Technical Committee
A. Ray Pentecost (Director)
Zhipeng Lu (Coordinator)
Cynthia Lockledge (Secretary)
Uran Sokoli (Website Manager)

UIA Secretariat
Pei Ing Tan, UIA Secretary General
Mwiyathi Wanjira
Claudia Da Silva
Sonia Cela

UIA International Competition Commission
Regina Gonthier
Jerzy Grochulski

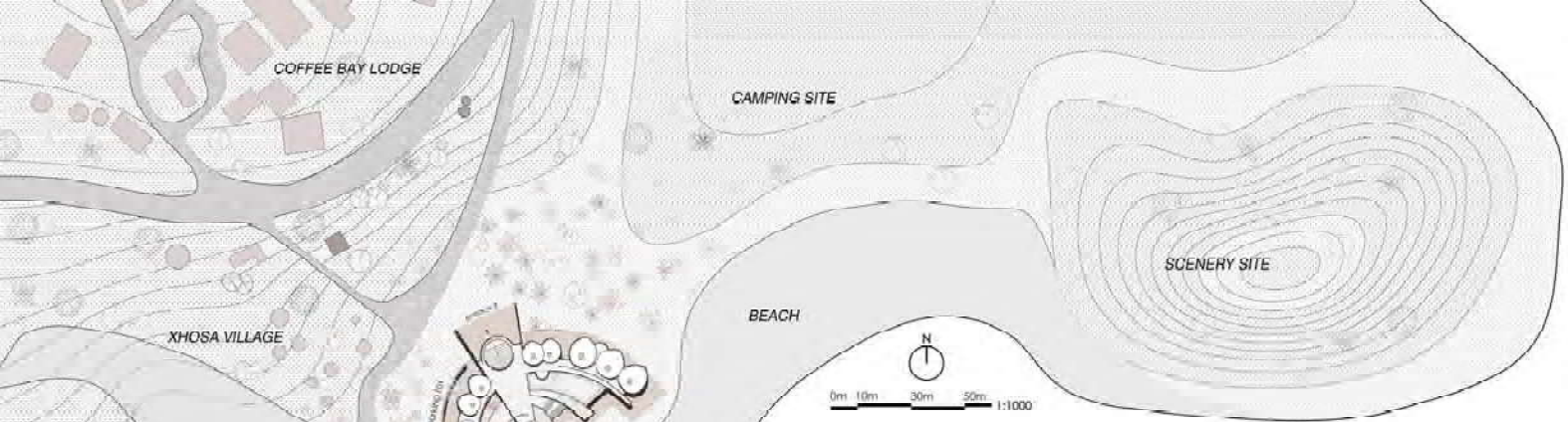
5. DOCUMENTATION OF WINNING ENTRIES

First Prize

Name of the Project: Xhosa Miracle Spring
Location: Coffee Bay, Eastern Cape, South Africa

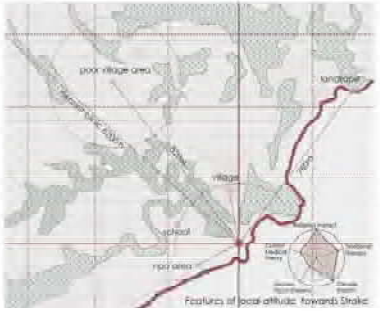
University: Harbin Institute of Technology
Country: China
Team Members:
Zheyuan Zhao (Leader)
Jiayu Sun
Yutong Sun
Haibo Sun,
Fei Lian (Advisor)

ID #: 63a288df288e8
Submission folder #: 27



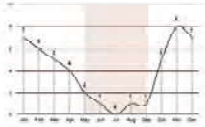
SITE INFOMATION

The site is far from towns. Lack of medical resources is common among the local. A NGO, school and several village are nearby. Female stroke survivor always choose referring to traditional even religious therapy.

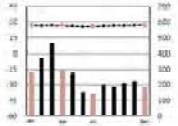


CURRENT CHALLENGES

CLIMATE



Half a year of extreme drought need supply of freshwater



High temprature demands more ventilation

SOCIETY

Mobidity

Mobidity rate of stroke among Xhosa is higher than average

Poverty

Xhosa female patients can't afford correct therapy and traffic fee

Inscience

Rural Xhosa believe in traditional ritual therapy and their god

Insulation

Absense of doing farm work make them hard to re-enter society

PROBLEM & RESPONSES

Focus on Xhosa women habits, abilities and current adversity

Aquatic spirit UDODOBAWU religion based activity and therapy

Re-participation training of farm-work and planting

GENERATION PROCESS

STATISTICS

A graph generated from the statics of the active range of stroke survivors' recover stages

TRENDS

Transform the graph into a practicle area which fits in the site well and interact with the environment

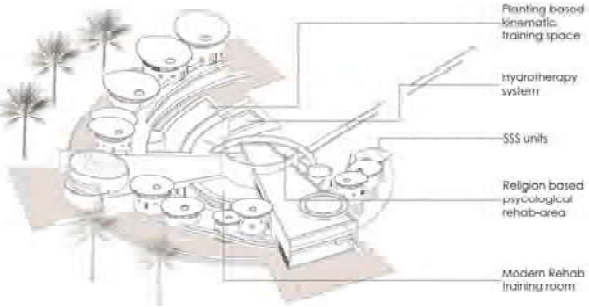
BLOCKS

Set different categories of space blocks to contain different functions

ARCHITECTUAL

Take the circumstance,featured space and dwelling units into consideration

COMPONENTS & FUNCTIONS



XHOSA MIRACLE SPRING

01 Preliminary Research

Background, problem seeking and pre-research

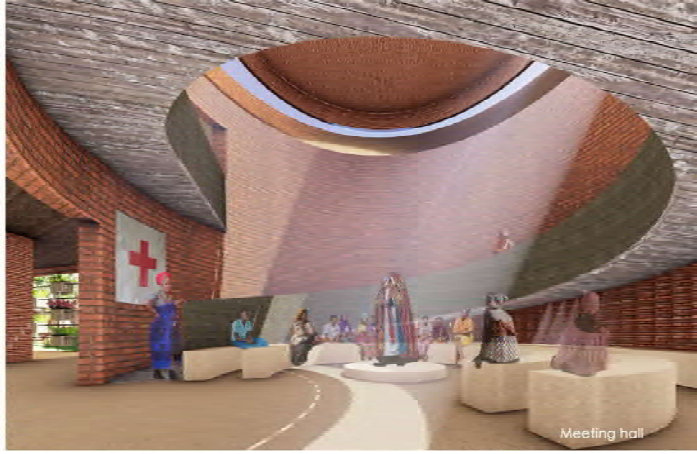
The project is designed for Xhosa women stroke survivors, who live in Eastern Cape province of South Africa. We specially choose Coffee Bay of Wild Coast to provide a convenient and innovative local stroke rehabilitation center for them.

Stroke Survivor Rehabilitation Center For Xhosa Women

INTRO: This stroke survivor center is specially designed for poor Xhosa female sufferers. They do most farm work in tribes before stroke and find it difficult to return normal life after recovery. We take their deep belief in traditional herbal therapy and their religion UDADOBAWU(an aquatic spirit curing patients) in consideration in order to create a religion based local rehab-center to help them regain labour in an acceptable way.


Herbal processing


Corridor planting boxes


Meeting hall

CULTURAL EVIDENCE
TRADITION & RELIGION


Herbal therapy belief
Refering to local herbal therapy is a unique Xhosa feature


Water spirit worship
Xhosan believe that praying to UMDDLAWU the water spirit can get cured while sick.


Collective religious activity
Collective religious activities play an important role in Xhosa life

ENDEMIC ARCHITECTURE



Centralized residence with circular units


Clergy core


Contemporary form

The traditional houses in Xhosa tribes have centripetal characteristics. The public central area dominated by the clergy space has high accessibility for all people in a tribe. This feature continues to today and should be applied in design.

02 Medical Space Planning
Cultural evidence and treatment activity space arrangement.

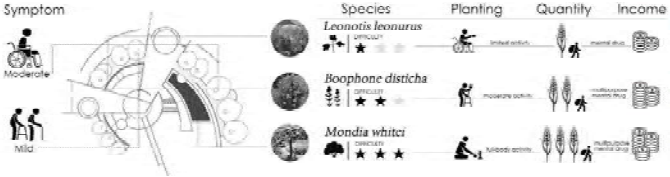
The medical space is carried out in accordance with the local cultural evidence and progressive therapeutic intensity. It includes psychotherapy and communication space with religious space as the core, modern sports rehabilitation space with hydrotherapy as the core, and sports rehabilitation space with planting ability recovery as the core. Meanwhile, income generation and profit are achieved through planting recovery activities.

OPERATION MODE
PATIENT CLASSIFICATION

1.Doctor eliminates severe sufferers

2.Classify income generator candidates by questionare

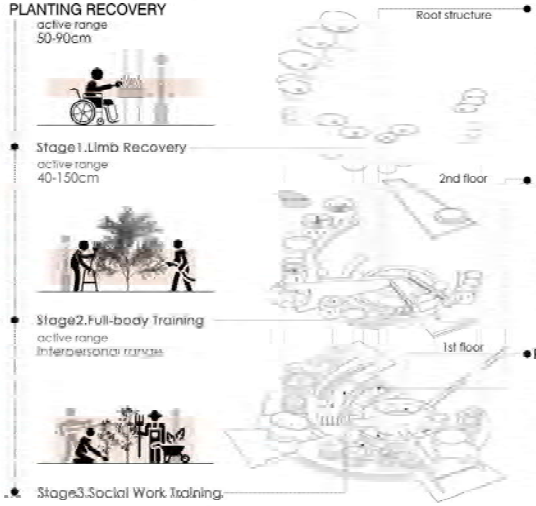
INCOME GENERATION
Symptom



INCOME UTILIZATION
The products obtained through planting and processing of plant products will be used for the internal operation of the rehabilitation center and put into the commodity market



PLANTING BASED EXERCISE
PLANTING RECOVERY



- active range 50-90cm
- Stage1.Limb Recovery
- active range 40-150cm
- Stage2.Full-body Training
- active range Interpersonal range
- Stage3.Social Work Training

-THERAPUTIC COMPONENTS
- EXERCISE RECOVERY

Space divided by recovery stages
Rehabilitation gymnasium is divided into three blocks according to the stages of rehabilitation

- HYDROTHERAPY SPACE

Sight design by section
Hydrotherapy pool allows patients to observe and evaluate the implant practitioner

- PSYCOLOGICAL THERAPY

Religious intervention
Religious elements intervene in medical inquiry and group healing to increase acceptance

SSS UNITS


- Single Room

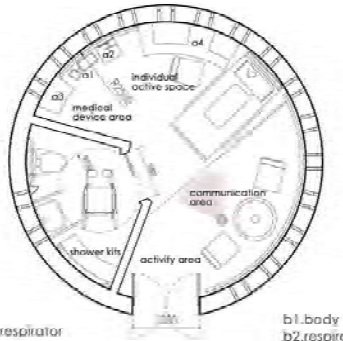

- Double Room


- Triple Room


Core space of religion

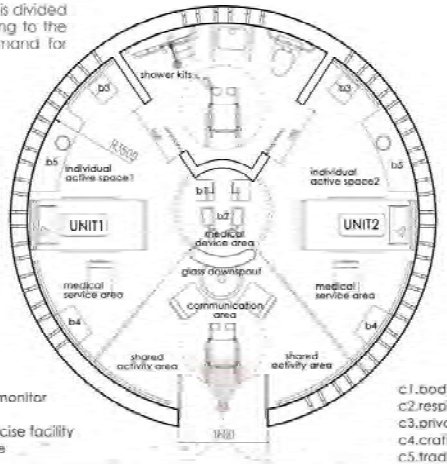
DETAILED SSS UNITS PLAN 1:50

Stroke Survivor 's Spaces are divided into three levels, serving patients with different activity abilities and needs in the early, middle and late stages of treatment. The room capacity is divided into single room, double room and triple room according to the equipment used by patients in each period, the demand for medical service space and social ability.



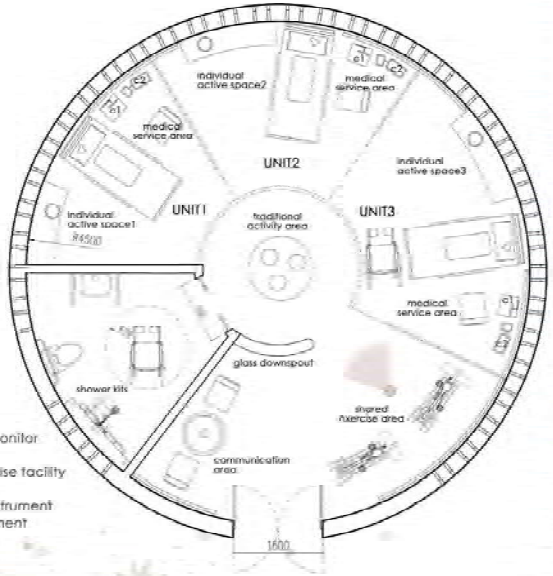
a1.respirator
a2.body data monitor
a3.nursing table
a4.storage table

SINGLE ROOM



b1.body data monitor
b2.respirator
b3.private exercise facility
b4.nursing table
b5.craft table

DOUBLE ROOM



c1.body data monitor
c2.respirator
c3.private exercise facility
c4.craft table
c5.traditional instrument
c6.sports equipment

TRIPLE ROOM

03 Architectural Approach

Overall plan and detailed partial plan for medical target

The plan presents a centripetal layout. According to Xhosa tradition, religious space is the core of the building, the living units of patients and staff are spread outside, various professional medical and rehabilitation spaces are arranged between them. All types of patients and their corresponding medical service spaces have the most efficient and reasonable traffic flow lines.

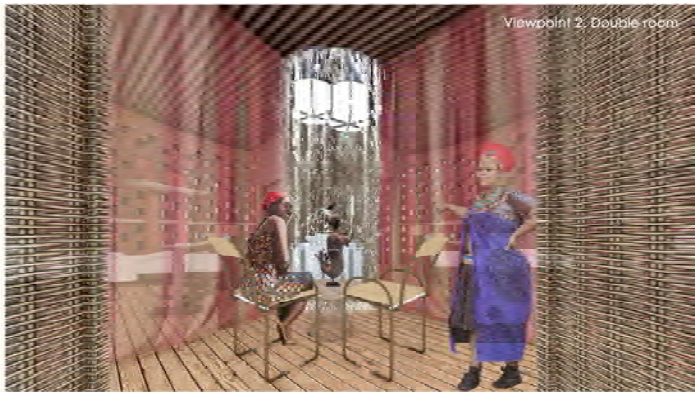
1st FLOOR PLAN 1:200

a. Single SSS unit
b.Double SSS unit
c. Triple SSS unit
01.Entrance hall
02.Meeting hall
03.Reception area
04.Hand training area

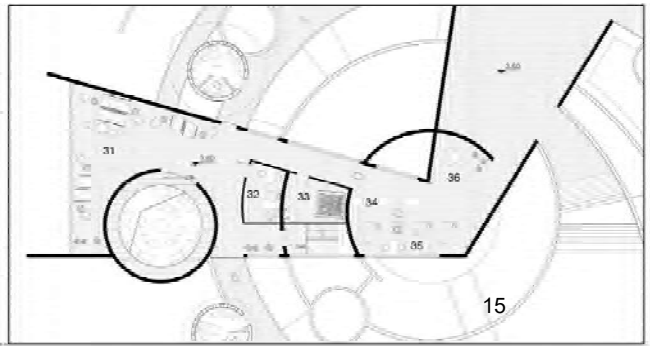
05.Electrotherapy room
06.Sense recovery room
07.Integrated training room
7a.Passive training area
7b.Assisted training area
7c.Active training area
08.Religious activity center
09.Planting training area
10.Medical observation room
11.Hydrotherapy preparation room
12.Hydrotherapy pool
13.Multi-function canteen
14.Active training area
15.Nursing station

PARTIAL PLAN 2F

16.Male staff locker
17.Female staff locker
18.Storehouse
19.Diet preparation room
20.Kitchen
21.Staff active area
22.Medical research area
23.Storehouse
24.Office
25.Staff canteen
26.Toilet
27.Utility room
28.Footpath
29.Staff active area
30.Staff bedroom
31.Communication area
32.Consultation room
33.Integrated medical room
34.Family resting area
35.Collum training space
36.Resting area



PARTIAL 2nd FLOOR PLAN 1:200



OVERALL REPORT:

Xhosa Miracle Spring is a stroke rehabilitation center for Xhosa women stroke survivors in Eastern Cape, South Africa. It is characterized by an evidence-based design to create a local program that is appropriate to the local ecological and human conditions. The project has two main targets: 1. To enable rehabilitation and communication activities for stroke survivors at different recovery stages with different therapy and space typologies; 2. To restore social role of survivor by integrating their farming abilities into therapeutic activities, thus finally helping them achieving social reintegration after rehabilitation.

The following innovation points in the design concept are presented: 1. The integration of religious elements into the characteristic rehabilitation space through evidence-based design. The scheme captures Xhosa people's memory of the sea and water spirit to shape the space for psychological recovery and shared collective religious activities. It also contains hydrotherapy service with a line-of-sight to the sea to complement physiological rehabilitation and improve patients' acceptance of modern stroke rehabilitation therapies; 2. Through planting activities to generate income while conducting physical rehabilitation training, to reduce the economic burden on patients' families and to lower hospital operating costs.

From the perspective of architectural design, the centripetal layout replays the traditional residential construction of Xhosa, and the circular SSS units with local characteristics that can carry different numbers of people have discrete features based on morphological logic with the central medical rehabilitation space in order to obtain an appropriate area of rehabilitation space. The use of sheep bricks made of local materials to shape the preparation of the façade facilitates the exchange of information. In terms of architectural performance, the scheme is also characterized by green energy efficiency, in line with the local climate, organizing rainwater and internal water in a water circulation system, through specific masonry methods to improve the air quality of the internal environment, optimize the light conditions, improve the weather resistance of the building, and fully achieve the integration of the building into the local ecological and humanistic environment.

In summary, this project not only responds to the therapy, communication and information provision target mentioned in Novall aspects by optimizing the layout and functional hierarchy, but also takes into account religious and cultural factors to help patients achieve recovery in a sociological sense, thus truly helping Xhosa women stroke survivors to recover in both physical and psychological terms.

INDOOR CIRCUMSTANCE OPTIMIZATION

SSS SECTION 1:50 (Double room)

PERSPECTIVE SECTION

OUTDOOR FIELD

The outdoor field includes the non-planting area and the second-floor platform, providing flexible sports space and sufficient communication space

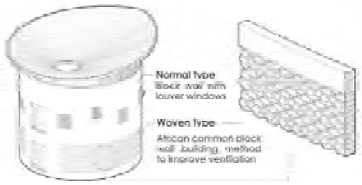
04 Local Adaptation Design

Resource utilization and indoor performance improvement

Through scientific demonstration, energy conservation is carried out on all parts of the architecture, and the generated water and power resources are applied to the special medical space, which will help the building achieve self-sustainment in the East Cape Province of South Africa with special climate conditions

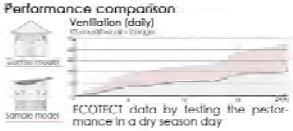
ENCLOSURE STRUCTURE

WALL DESIGN

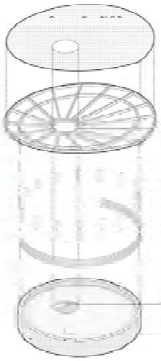


Material & construction

Performance comparison



ECOTECT data by testing the performance in a dry season day

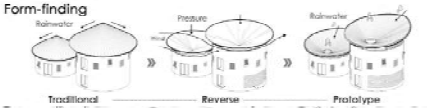


ROOF DESIGN

- **1.Membrane surface**
  Membrane surface coated with waterproof paint waterproof the summer rainfall
- **2.Spoke truss**
  Vertical and horizontal frames are set under the membrane

- **3.Vertical support**
  Short columns arranged evenly to support the roof
- **4.Horizontal stiffener**
  Round fences support the small columns
- **5.Horizontal stiffener**
  300mm wide glass downpipe for guiding rainwater
- Roof louver for ventilation

Form-finding

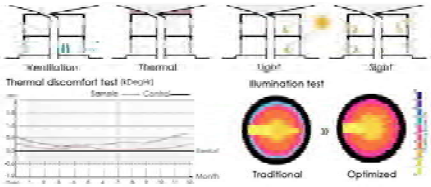


Preserve the drainage function of Xhosa roof

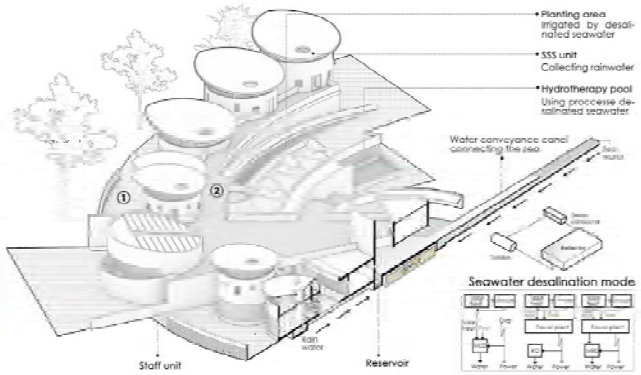
Reverse the roof to prevent wind pressure

Optimize the shape to improve rain collection and ventilation ability

Performance analysis



WATER UTILIZATON & CIRCULATON



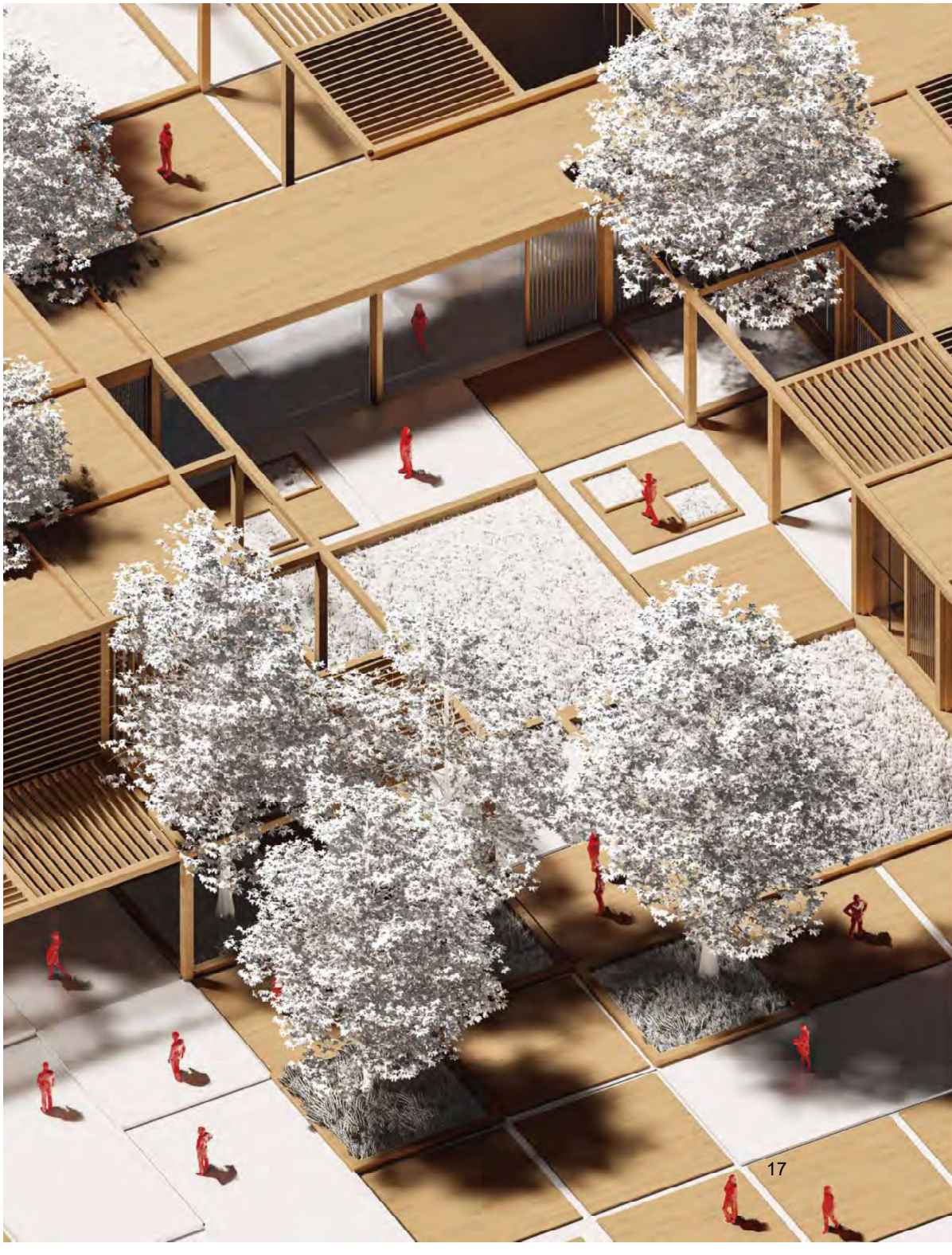
SECTION 1-1 1:150

Second Prize

Name of the Project: Community Patches - Warm Around, Life Around
Location: Beijing, China

University: Beijing University of Civil Engineering and Architecture
Country: China
Team Members:
Zuozheng Shi (Leader)
Han Cui
Biao Chen
Xiaohui Guo
Wen Ouyang (Advisor)
Tingwan Huang (Advisor)

ID #: 64074ef0580aa
Submission folder #: 103

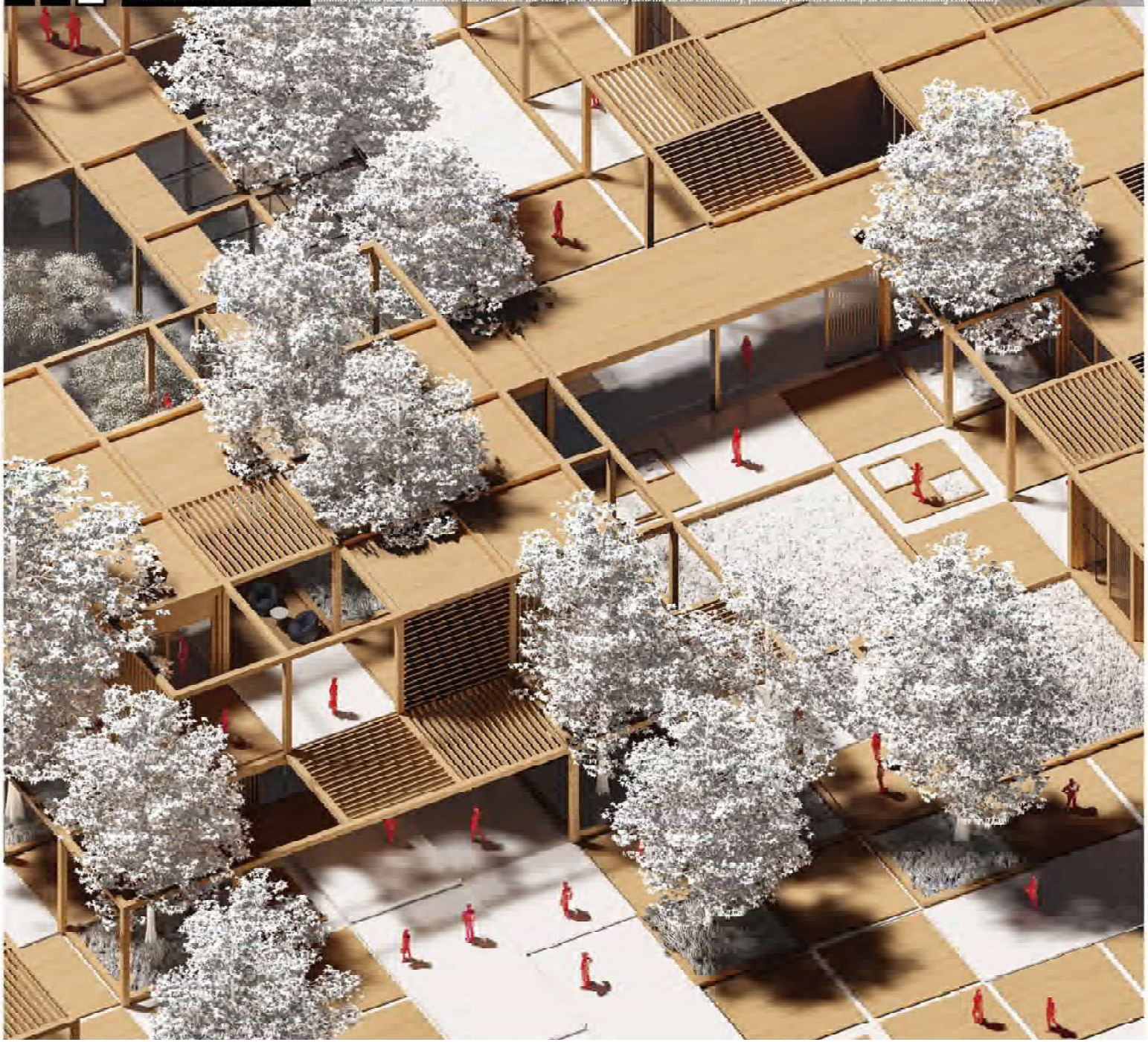


COMMUNITY PATCHES

WARM AROUND,LIFE AROUND

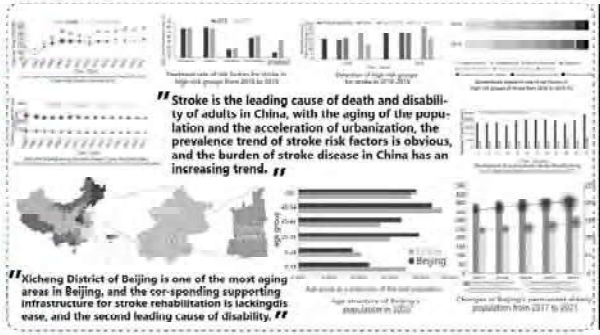
NEXT GENERATION OF STROKE REHABILITATION CENTRES

With the rapid development of digital design, we should consider how to use new technologies to empower stroke well-being. Then, in conceiving the next generation of rehabilitation centers for stroke survivors, we hope that they will be universally applicable to all situations in today's society. The concept of modularity is on the horizon. On this basis, combined with the requirements of the mission letter provided by the organizer, we proposed the concept of "design half", that is, the public service part of the mission letter is used as a prefabricated anchor, and the stroke survivor space allows us to focus on the design half at the macro level. At the meso level, the barrier-free toilets and rehabilitation units required by stroke survivors are the anchors of this level. Units that are customized according to the individual needs of stroke survivors of different ages, genders, jobs, and degrees are our focus. At the micro level, we use digital technology to achieve seamless online and offline health care, and realize a rehabilitation center for work, life and leisure in the whole chain.We chose the Wenzhuang community in Xicheng District, Beijing as our base to combine community services to build a rehabilitation center for the next generation of stroke survivors. The central axis of the wellness centre is the public space, which connects the two stroke survivor spaces in the north and south. The two spaces house nursing stations and rehabilitation training rooms, respectively, to ensure that survivors can receive optimal care and recovery. At the same time, the wellness unit also takes into account the concept of giving back to the community, hoping that through this wellness center, it can provide welfare and help to the surrounding community.This health care center also embodies the concept of returning benefits to the community, providing benefits and help to the surrounding community.

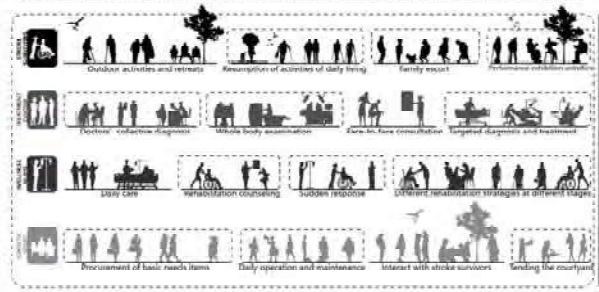


A STUDY OF THE CURRENT STATE OF STROKE: WORLD-CHINA

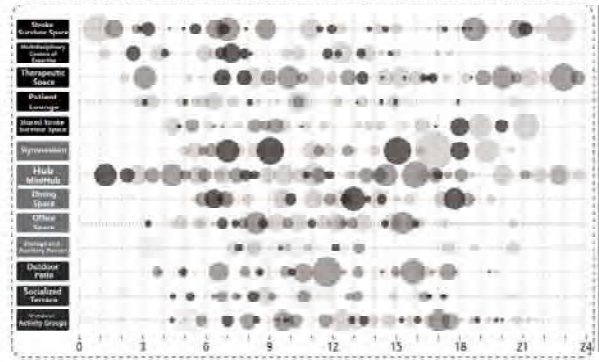
A STUDY OF THE CURRENT STATE OF STROKE: BEIJING-XICHENG DISTRICT



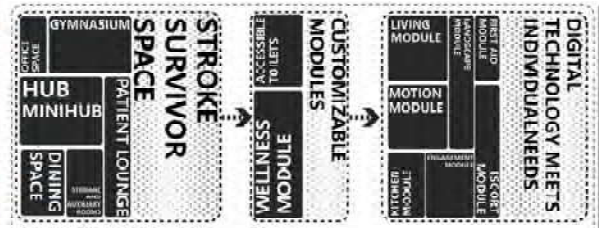
POPULATION NEEDS ANALYSIS



24-HOUR FUNCTIONAL RELEVANCE



DIY & DESIGN HALF



SITE ANALYSIS: FROM XICHENG DISTRICT TO BAIWANZHUANG COMMUNITY

Considering that the aging of the population in Xicheng District is relatively serious. the demand for stroke rehabilitation centers in Xicheng District is obvious.

The population density of Xicheng District is **25,767 people/square kilometer**, indicating that the overall population density of Millionzhuang Community is low, which is consistent with the lower plot ratio.

The outflow of population in the community of Million Zhuang was large, the popularity decreased significantly, and the overall trend of decline. **The age structure of the community is aging and the population structure is heterogeneous.**

RESEARCH PHOTOS

We wondered if we could **introduce this landscape healing into our next generation of stroke survivors rehabilitation center.**

We hope our program is **a combination of community service functions, a comprehensive that can give feedback to the community,** not just for stroke survivors.

This form of community farmland will also be embedded in our proposal as a highlight of our proposal for the residents of the Baiwanzhuang community.

REHABILITATION MODE HOW STROKE SURVIVOR MOVE IN

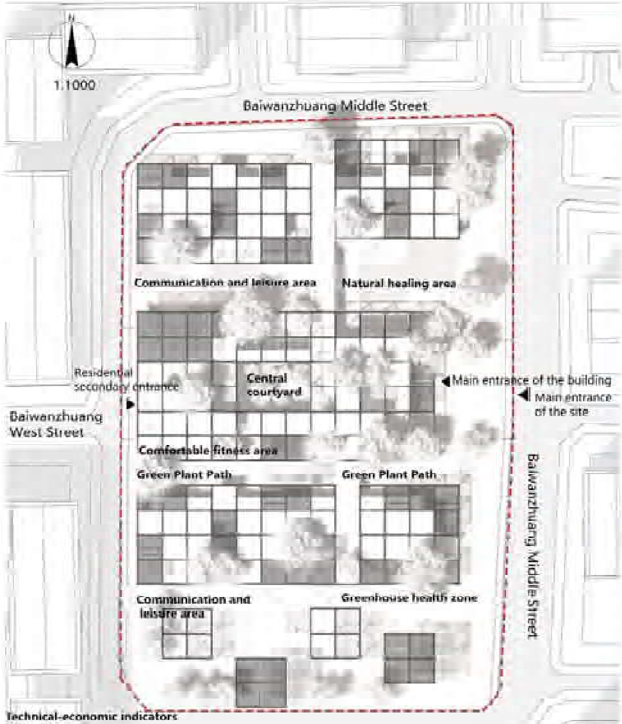
DIFFERENT SURVIVORS → Express Needs → BAIWANZHUANG ONLINE HEALTH PLATFORM → Provide Orders → COMMUNITY COOPERATIVE BUILDING COMPONENT FACTORY → Dispatch Orders → COMMUNITY SUPPORTING LOGISTICS → Delivery → ON-SITE INSTALLATION

I.Different Needs

II.Online Customization

III.Production of Furniture

IV.Delivered and Installed



1:1000
Baiwanzhuang Middle Street
Communication and leisure area
Natural healing area
Residential secondary entrance
Central courtyard
Main entrance of the building
Main entrance of the site
Baiwanzhuang West Street
Comfortable fitness area
Green Plant Path
Green Plant Path
Communication and leisure area
Greenhouse health zone
Baiwanzhuang Middle Street
Baiwanzhuang Middle Street

Technical-economic indicators
GFA: 2600 ㎡
Land area: 8400 ㎡
Floor area ratio: 0.32
Greening rate: 60%
Number of wards: 16

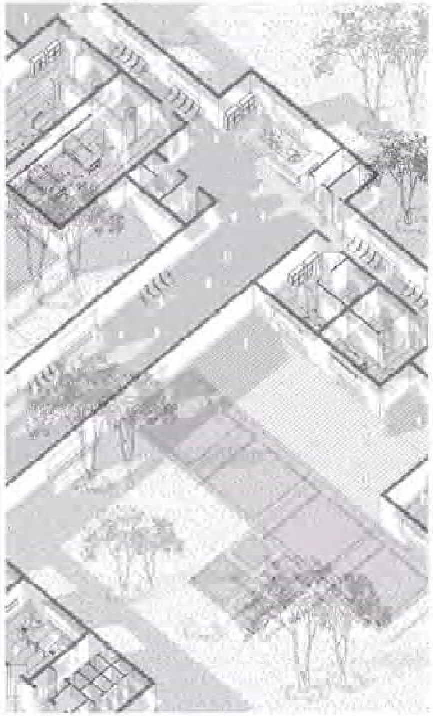
MASTER PLAN 1:1000

COMMUNITY PATCHES

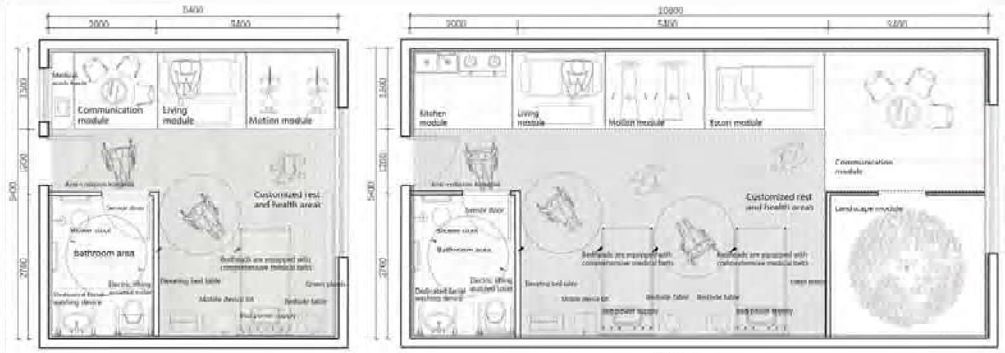
WARM AROUND,LIFE AROUND

NEXT GENERATION OF STROKE REHABILITATION CENTERS

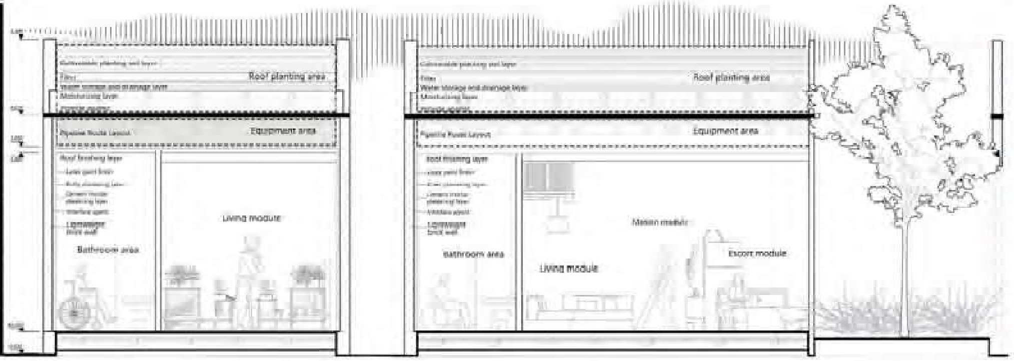
3D FLOOR PLANS OF THE REHAB WARD AND "STROKE SURVIVOR'S SPACE



"STROKE SURVIVOR'S SPACE" PLAN 1:50



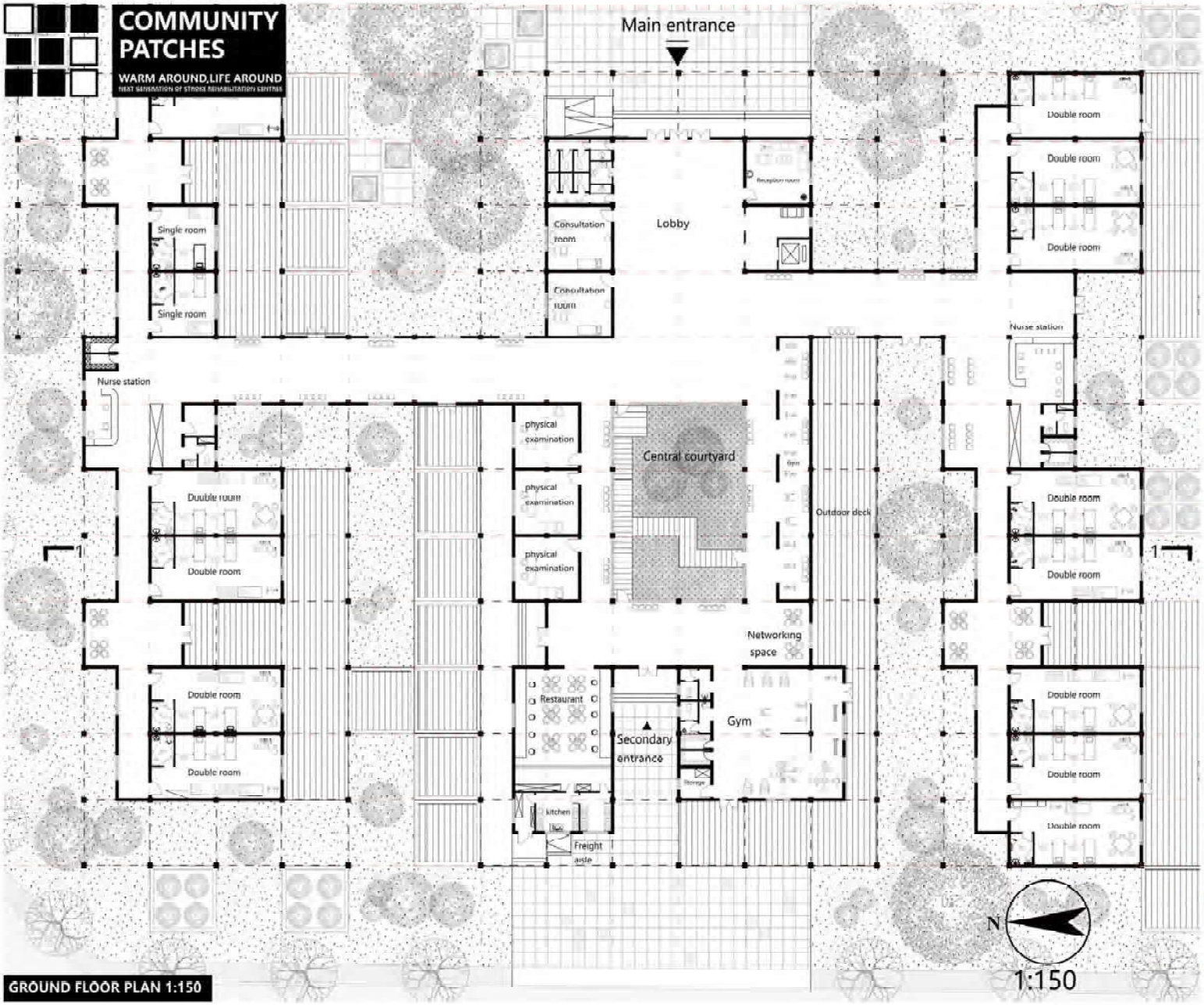
"STROKE SURVIVOR'S SPACE" SECTION 1:50



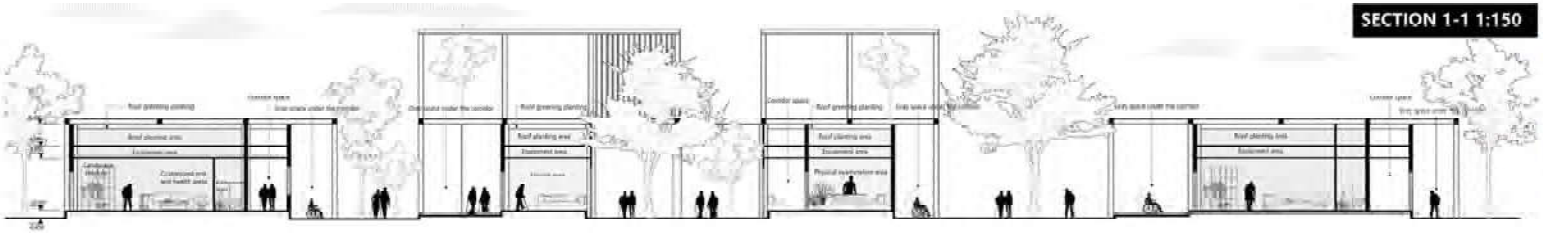
COMMUNITY PATCHES

WARM AROUND,LIFE AROUND

NEXT GENERATION OF STROKE REHABILITATION CENTRES

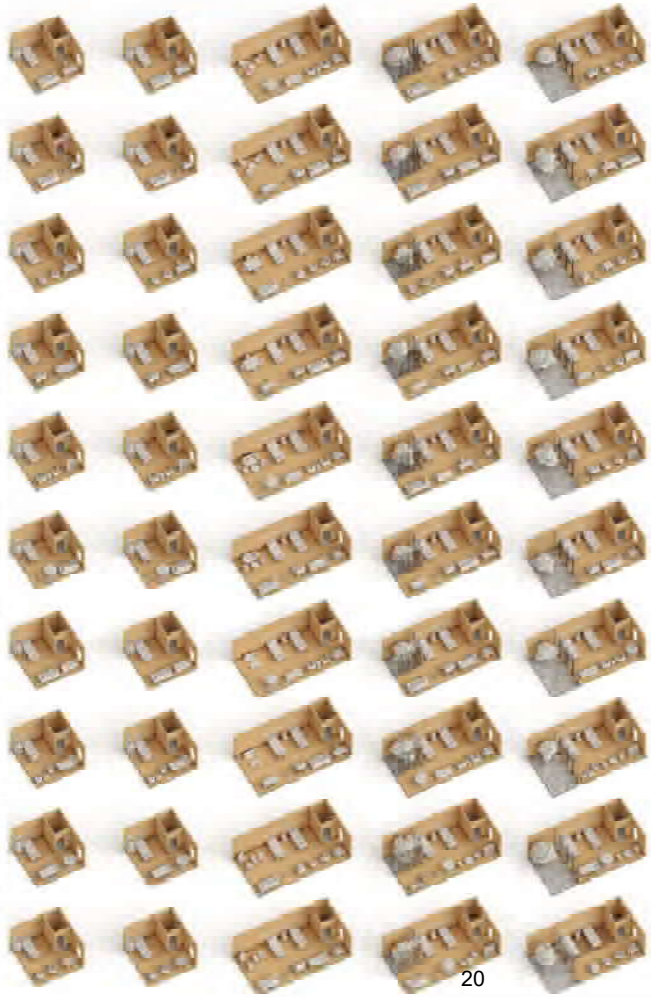


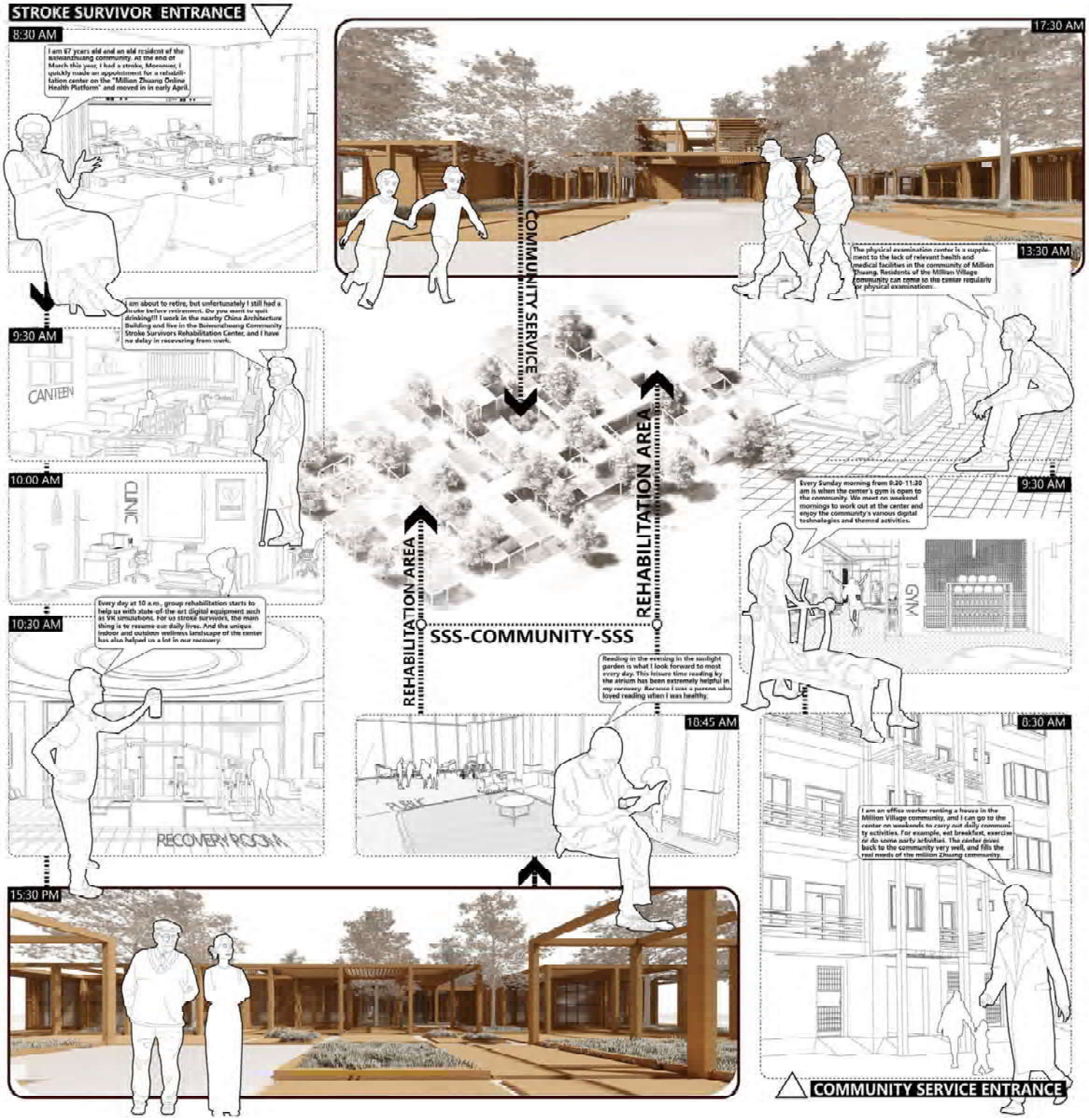
GROUND FLOOR PLAN 1:150



SECTION 1-1 1:150

ILLUSTRATION OF CUSTOM MODULE VARIABILITY




STROKE SURVIVOR ENTRANCE
8:30 AM
I am 67 years old and an old resident of the nanwanzhuang community. At the end of March this year, I had a stroke. Moreover, I quickly made an appointment for a rehabilitation center on the "Million Zhuang Online Health Platform" and moved in in early April.
9:30 AM
I am about to retire, but unfortunately I still had a stroke before retirement. Do you want to quit drinking!!! I work in the nearby China Architecture Building and live in the Beinanzhuang Community Stroke Survivors Rehabilitation Center, and I have no delay in recovering from work.
CANTEEN
10:00 AM
CLINIC
10:30 AM
Every day at 10 a.m., group rehabilitation starts to help us with state-of-the-art digital equipment such as VR simulations. For us stroke survivors, the main thing is to resume our daily lives. And the unique indoor and outdoor wellness landscape of the center has also helped us a lot in our recovery.
RECOVERY ROOM
15:30 PM
COMMUNITY SERVICE
17:30 AM
REHABILITATION AREA
REHABILITATION AREA
SSS-COMMUNITY-SSS
13:30 AM
The physical examination center is a supplement to the lack of relevant health and medical facilities in the community of Million Zhuang. Residents of the Million Village community can come to the center regularly for physical examinations.
9:30 AM
Every Sunday morning from 9:30-11:30 am is when the center's gym is open to the community. We meet on weekend mornings to work out at the center and enjoy the community's various digital technologies and themed activities.
GYM
18:45 AM
Reading in the evening in the sunlight garden is what I look forward to most every day. This leisure time reading by the atrium has been extremely helpful in my recovery. Because I was a person who loved reading when I was healthy.
8:30 AM
I am an office worker renting a house in the Million Village community, and I can go to the center on weekends to carry out daily community activities. For example, eat breakfast, exercise or do some party activities. The center gives back to the community very well, and fills the real needs of the million Zhuang community.
COMMUNITY SERVICE ENTRANCE


COMMUNITY PATCHES
WARM AROUND,LIFE AROUND
NEXT GENERATION OF STROKE REHABILITATION CENTRES

Third Prize

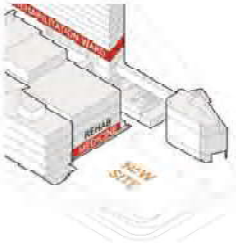
Name of the Project: Meet Me at S.M.L. !
Location: Seoul, South Korea

University: Kwangwoon University
Country: South Korea
Team Members:
Byeongsoo Kim (Leader)
Kyeonghyeon Park

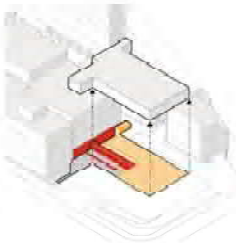
ID #: 63fff765ee318
Submission folder #: 125

Meet me at S.M.L I

Seoul Medical Center(SMC) is a leading public general hospital which demonstrates a new medical program and facility among the other public hospitals. Due to the increasing number of stroke patients due to aging society and the absence of a stroke rehabilitation center in South Korea, this project is planned on the extra land for future extension of the hospital. By planning a new stroke survivor space(SSS) next to the department of rehabilitation medicine, it would bring an attention to the stroke and the facility from the society. Thus, the close rehabilitation medicine would assure the stroke survivors by providing rapid response to the possibility of the recurrent stroke.



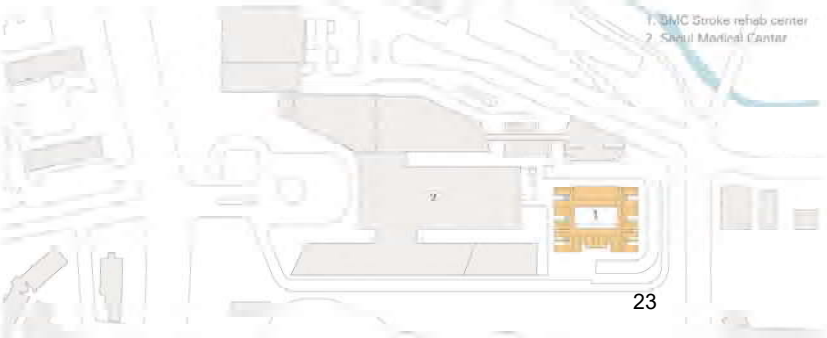
Plan next to Rehab Medicine to have rapid response to recurrent stroke



Connect the existing Rehab Medicine and new Stroke survivor's space

Make inner courtyard to create healing environment

Arrange SSS surround the water garden to promote fast recovery



SCALE 1:1500

Stroke survivor's unit

The survivors can experience greenery by accessible outdoor terrace.

Small community space

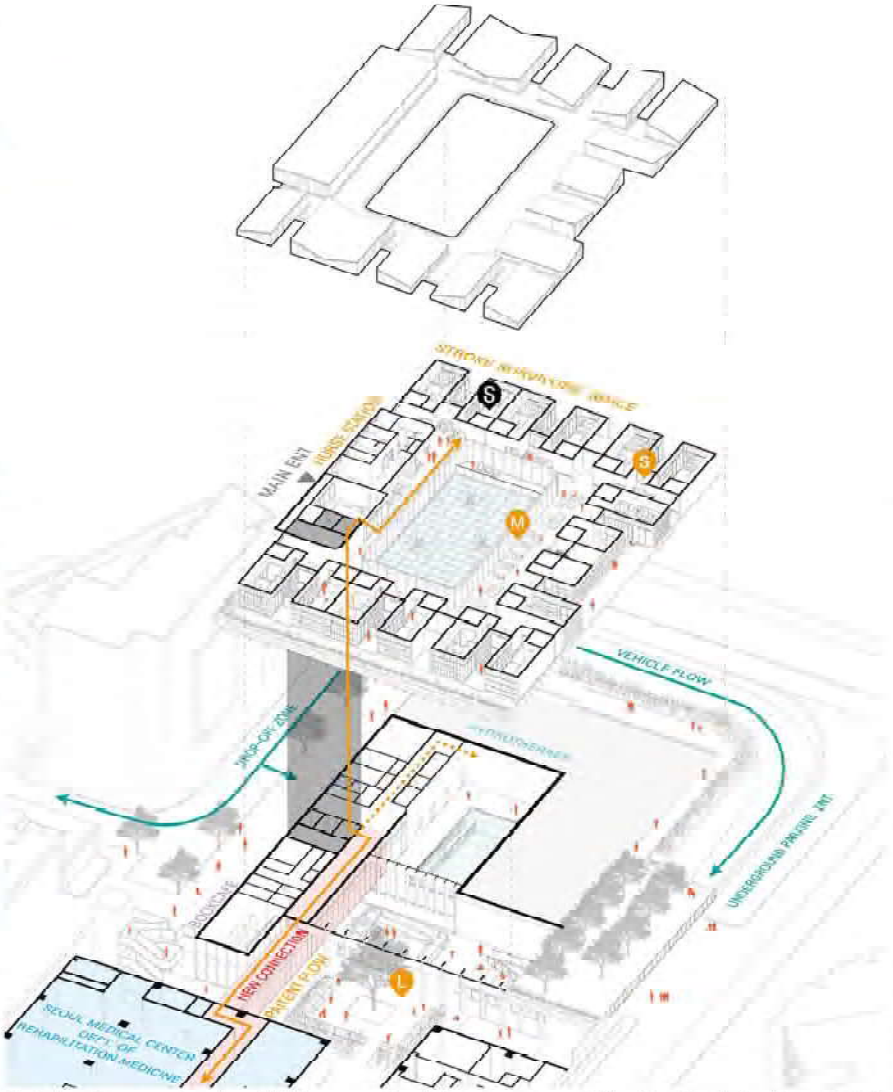
The survivors can meet up with medical staff and other survivors through small cs, which faces the corridor and the water garden.

Medium community space

The dining and activity area is arranged around the central water garden to provide relaxing atmosphere.

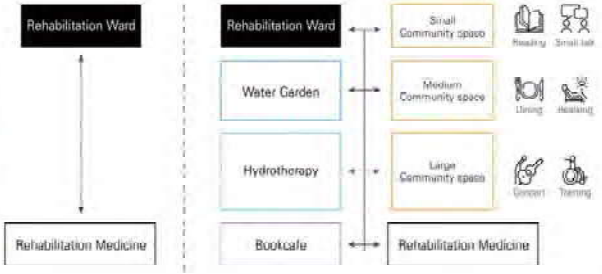
Large community space

On the semi-outdoor space near the hydrotherapy pool, the outdoor training area, event space and greenery is desgined for the patients, visitors and medical staff.

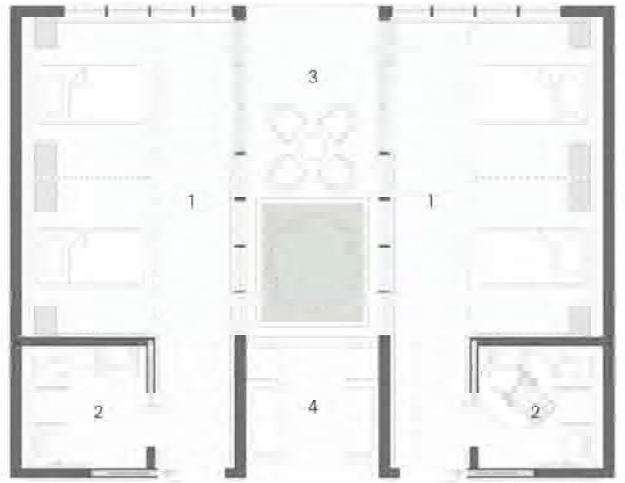


The stroke survivors can receive various rehabilitation programs through the new passage connected from the existing rehab medicine center to the hydrotherapy pool.

S.M.L. Community Spaces (CS)



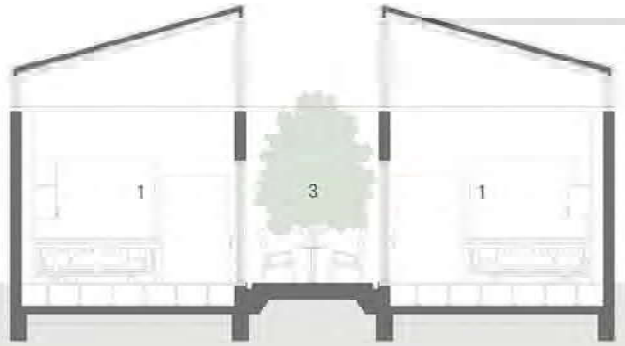
Due to the lack of public space for the rehabilitation ward of SMC, most of patients spend their time lying on beds other than rehab treatment time. This causes an adverse effect on the patient's treatment environment and recovery period. Therefore, in this project, a various scale of public space is planned to encourage the stroke survivors to visit the community space(CS) and interact with other people in their daily activity.



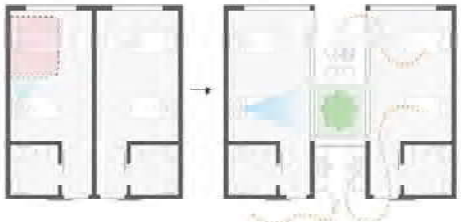
Stroke Survivor's Unit Plan

0 1 2 3 4 5M

1. Patient room
2. Restroom
3. Small community space (Outdoor)
4. Small community space (Indoor)



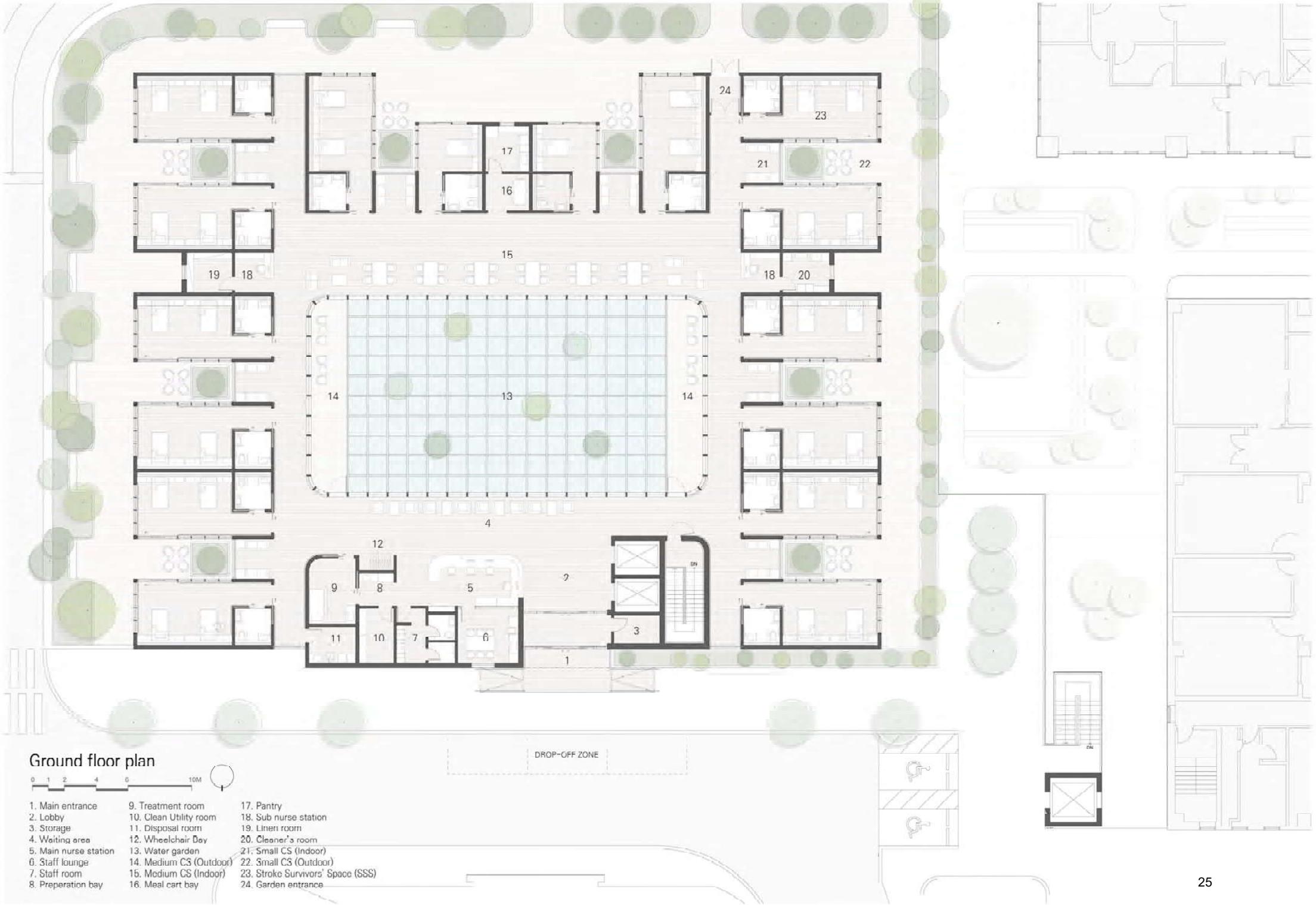
Roof & Light



Movement & View

The gable roof and the polycarbonate panel brings indirect sunlight into the stroke survivor's space which creates warm atmosphere and reduces glare caused by the direct sunlight.

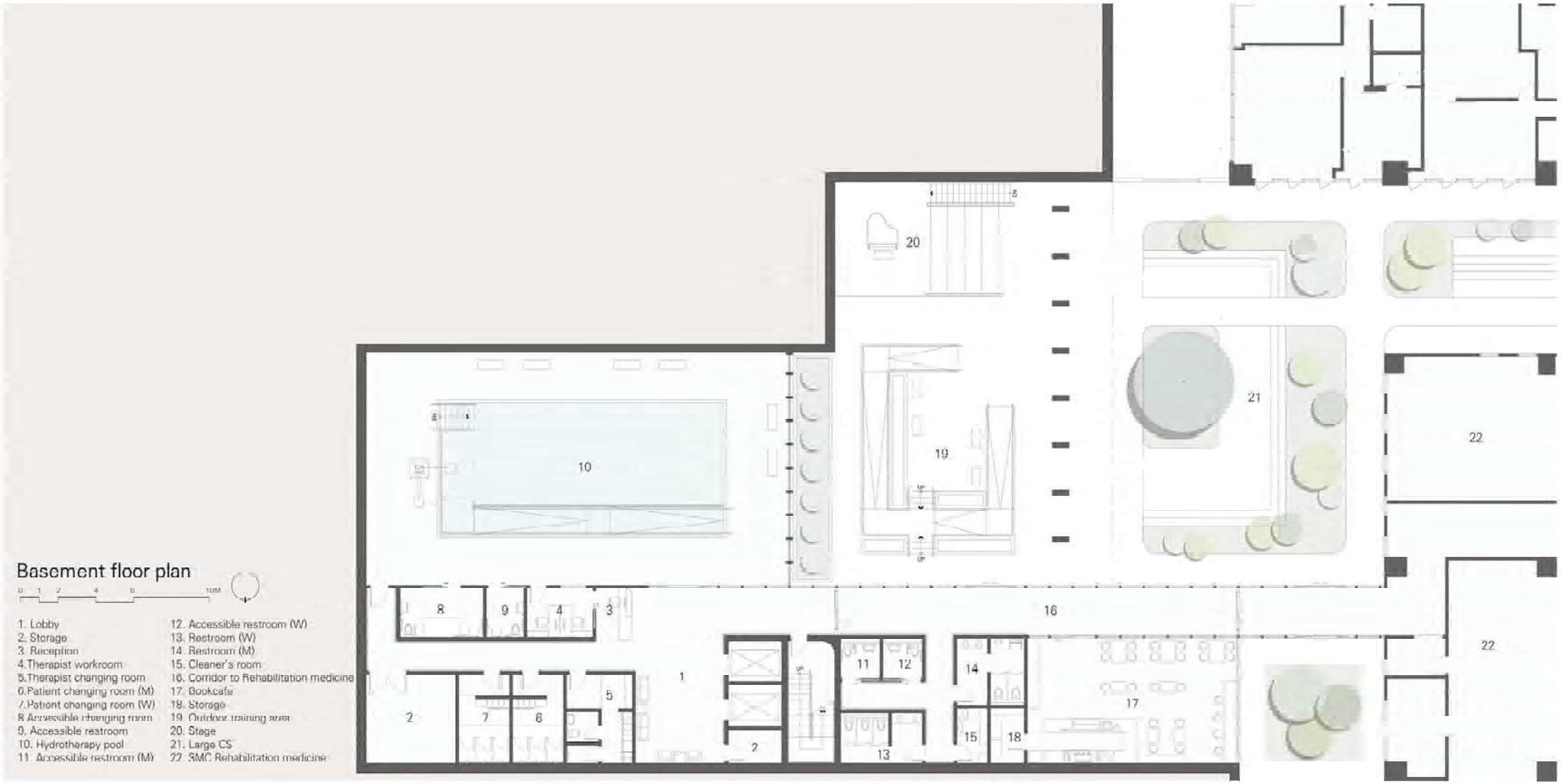
The existing two people inpatient room with the bed adjacent to another, has a problem of not having a control over the outside view, if the patient next to the window uses curtains for privacy. To solve this problem, an outside courtyard and terrace is inserted between the two inpatient rooms. Thus, all the survivors can see the external greenery which would promote fast recovery and give empowerment to the survivors.



Ground floor plan

0 1 2 4 6 10M

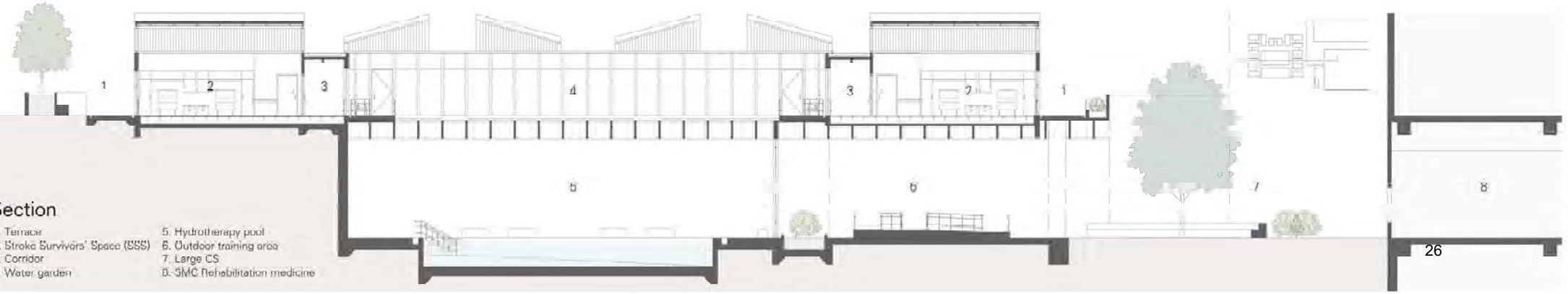
1. Main entrance
2. Lobby
3. Storage
4. Waiting area
5. Main nurse station
6. Staff lounge
7. Staff room
8. Preperation bay
9. Treatment room
10. Clean Utility room
11. Disposal room
12. Wheelchair Bay
13. Water garden
14. Medium CS (Outdoor)
15. Medium CS (Indoor)
16. Meal cart bay
17. Pantry
18. Sub nurse station
19. Linen room
20. Cleaner's room
21. Small CS (Indoor)
22. Small CS (Outdoor)
23. Stroke Survivors' Space (SSS)
24. Garden entrance



Basement floor plan

0 1 2 4 6 10M

1. Lobby
2. Storage
3. Reception
4. Therapist workroom
5. Therapist changing room
6. Patient changing room (M)
7. Patient changing room (W)
8. Accessible changing room
9. Accessible restroom
10. Hydrotherapy pool
11. Accessible restroom (M)
12. Accessible restroom (W)
13. Restroom (W)
14. Restroom (M)
15. Cleaner's room
16. Corridor to Rehabilitation medicine
17. Bookcafe
18. Storage
19. Outdoor training area
20. Stage
21. Large CS
22. SMC Rehabilitation medicine



Section

1. Terrace
2. Stroke Survivors' Space (SSS)
3. Corridor
4. Water garden
5. Hydrotherapy pool
6. Outdoor training area
7. Large CS
8. SMC Rehabilitation medicine

Fourth Prize

Name of the Project: Sustainable Survivor’s Village
Location: Yaoundé, Cameroon

University: National Advanced School of Public Works
Country: Cameroon
Team Members:
Sidoine Baudrel Nde Keulek (Leader)
Steve Wilson Ntakam Tonguembo
Lizette Marlaine Tsafack Donfack
Emy Sandrine Masso

ID #: 63bd0c81496fa
Submission folder #: 50

" Sustainable Survivor's Village "

SITE

In the center of Cameroon, on the outskirts of Yaoundé, a small village called Nkolfoulou is home to our project. Yaoundé being a large metropolis, we were interested in its outskirts in order to move stroke survivors away from the stress, noise and pollution of the urban center, to create a calm and peaceful space with the benefits of nature. In addition, Nkolfoulou has a wide range of natural materials, including its red lateritic earth, bamboo, stone, and wood that are used in traditional local construction.

DESIGN IDEA

Walking, playing, dancing... These small everyday activities have become cherished accomplishments for stroke survivors. Yet, conventional rehabilitation centers have been flawed in their ability to combine medical assistance with interaction with the outside world. In order to solve this problem, we visualized a space that would help restore physical, psychological, and spiritual health: the "Sustainable survivor's village" (SSV). A simple, modular and sustainable project made of local materials that takes into account the interaction between stroke survivors and their natural environment in the healing process. Our center is planned according to the architecture of the Bamiléké villages of West Cameroon: the living spaces are arranged along a central promenade. The separation between the survivors' space and the administrative space allows the inhabitants to have full control over their living space. The SSS is made modular and versatile by a two-person relocation that can be split in the event of a health crisis. Symbols carrying messages related to traditional wisdom are represented on the walls by the survivors in order to integrate them into the realization of their living space while optimizing the rehabilitation process. The roof extends into a public terrace to simulate a climbing area for the residents and serve as a link to the outside environment.

MATERIALS AND TECHNIQUES

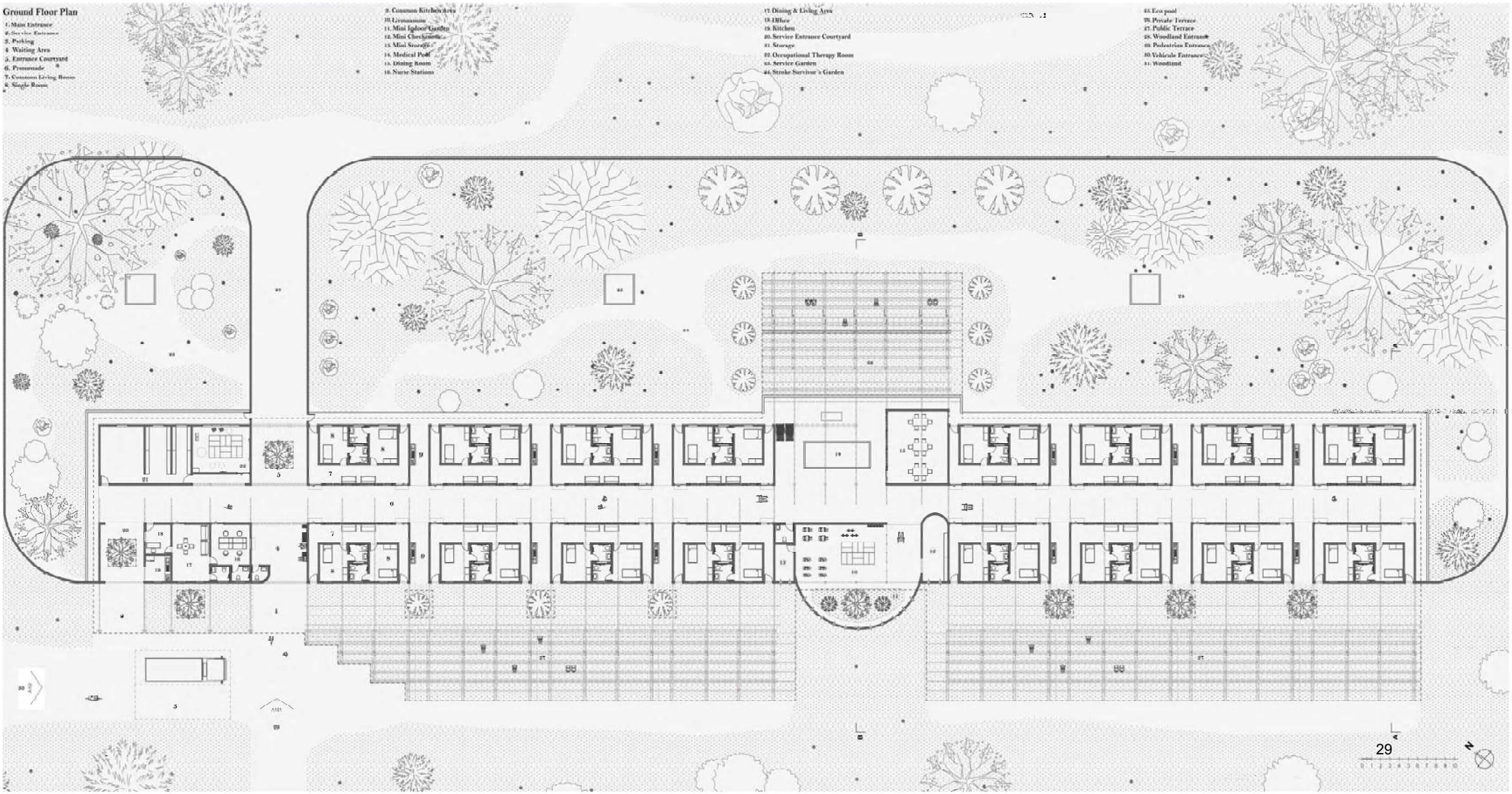
The use of local materials in the construction is privileged. The stone foundation allows an optimal distribution of the loads and participates in the reduction of the rise by capillarity. The rammed earth for the walls contributes to maintaining a comfortable indoor climate. The openings with louvers, the ceilings and the curtain walls made of woven bamboo promote good natural ventilation and air filtration in the building. The corrugated metal sheet roof, chosen for its lightness, ease of installation and durability, is supported by a bamboo frame. The choice of bamboo here is motivated by its technical abilities and its capacity for rapid regeneration in nature.

Rainwater is collected and stored in tanks and will be used for agricultural activity. The energy needs of the center are managed by photovoltaic panels placed on the roof to capture the maximum amount of sunlight. The installation of skylights on the roof allows for the optimization of natural lighting in order to reduce energy costs.

Situation Plan

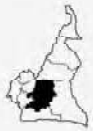
Ground Floor Plan

1. Main Entrance
2. Service Entrance
3. Parking
4. Waiting Area
5. Entrance Courtyard
6. Promenade
7. Common Living Room
8. Single Room
9. Common Kitchen Area
10. Gymnasium
11. Mini Igaloo Garden
12. Mini Checkpoint
13. Mini Storage
14. Medical Pool
15. Dining Room
16. Nurse Stations
17. Dining & Living Area
18. Office
19. Kitchen
20. Service Entrance Courtyard
21. Storage
22. Occupational Therapy Room
23. Service Garden
24. Stroke Survivor's Garden
25. Eco pool
26. Private Terrace
27. Public Terrace
28. Woodland Entrance
29. Pedestrian Entrance
30. Vehicular Entrance
31. Woodland



Location

Map of Africa with Cameroon highlighted



Map of Cameroon with the central region highlighted

Map of the central region with the city of Yaounde highlighted

Aerial capture of the site with the surroundings of the city of Yaounde

Climatic Data

Temperature Graph
The annual air temperature between 22 °c and 25 °c

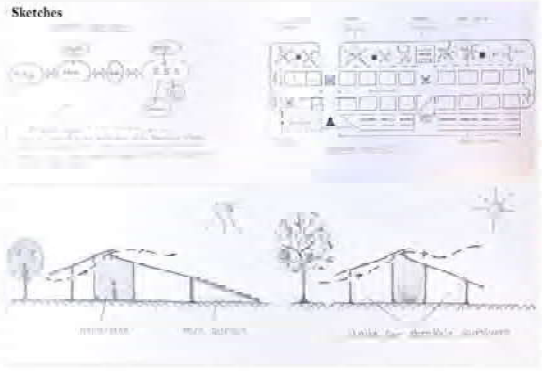
Humidity Graph
The annual humidity between 75% and 91%

Wind wheel Graph
The prevailing winds comme from the Southwest all year round

Sun Chart
Knowing the path of the sun to better design appropriate shading systems

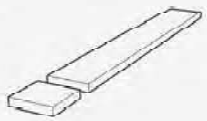
The constructions around the site and the most used and available materials

Sketches

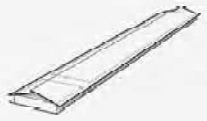


Conceptual Approach

1.Linear shape
Conditionned by climate data and traditional architecture

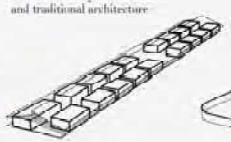


2.Program volumes
Here we have two blocks: SSS and administrative block



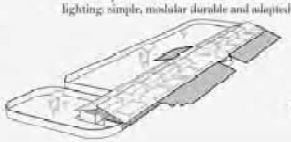
3.Ventilation roof system
A two-slope roof with ventilation and natural lighting; simple, modular durable and adapted.

4.Dividing function
Inspired by the Bamileke villagesthe housing unit blocks will be organized facing a long promenade

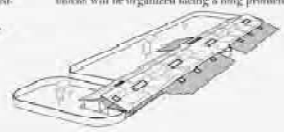


5.Spaces adaptation
The different spaces are adapted according to the context of the project

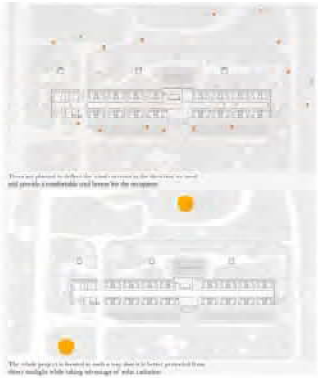
6.Garden walls
The gardens are secure, a good place for staff and stroke survivors to relax and take care of their bodies

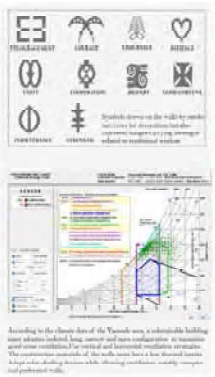


7.Escalation terraces
Staircase terraces to pratice walking, a meeting place shared by the center and the village community



8.Skylights
To increase the natural lighting and energy savings





Section A-A

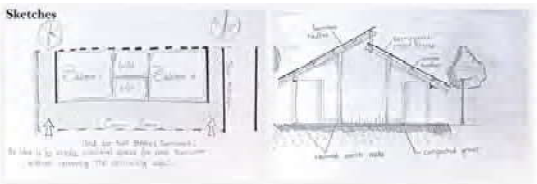
1. Single Room
2. Common Living Room
3. Promenade
4. Public Terrace
5. Stroke Survivor's Garden

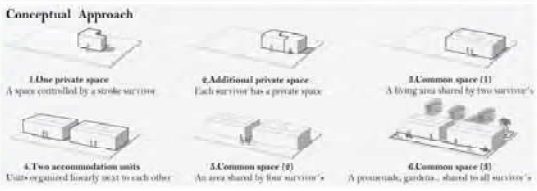
0 1 2 3 4 5

Section B-B

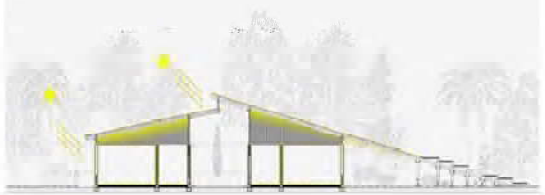
1. Dining Room
2. Medical Pool
3. Promenade
4. Gymnasium
5. Mini Indoor Garden
6. Public Terrace
7. Stroke Survivor's Garden
8. Private Terrace

0 1 2 3 4 5

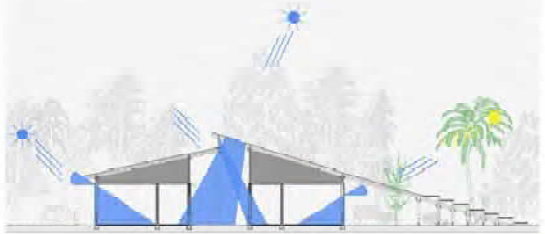




Acoustic Comfort
A wooden window system, rammed earth walls and woven bamboo ceiling reduce road traffic noise and filter bird song

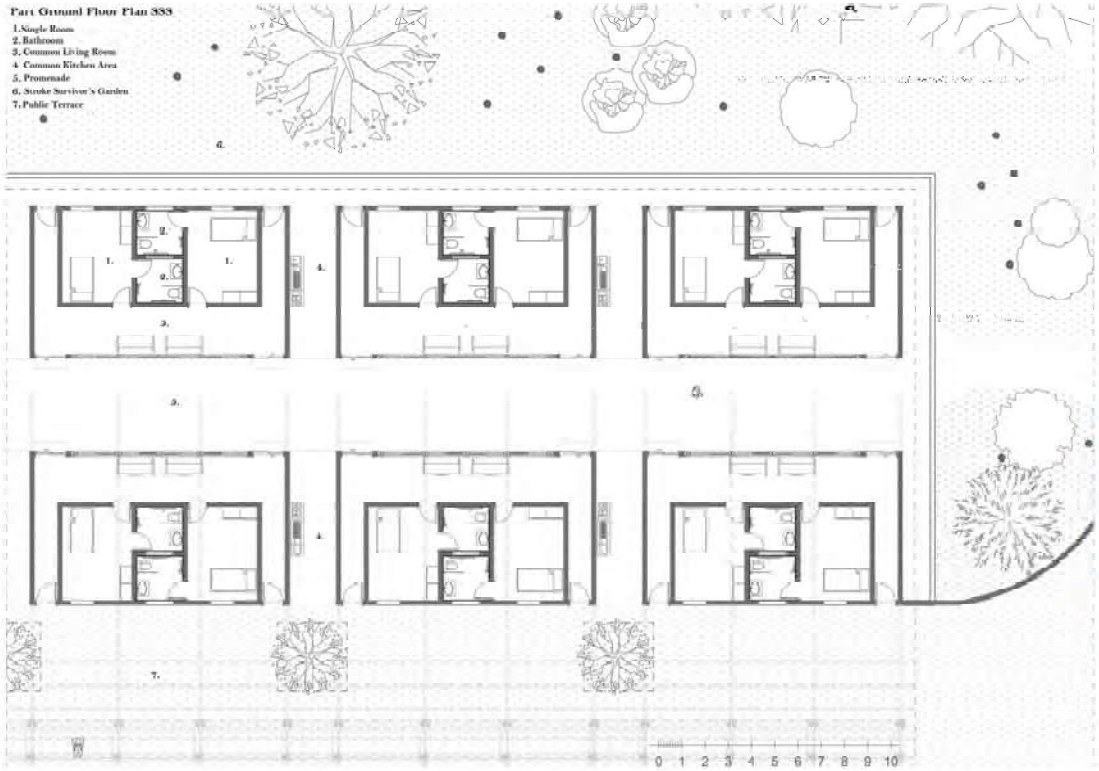


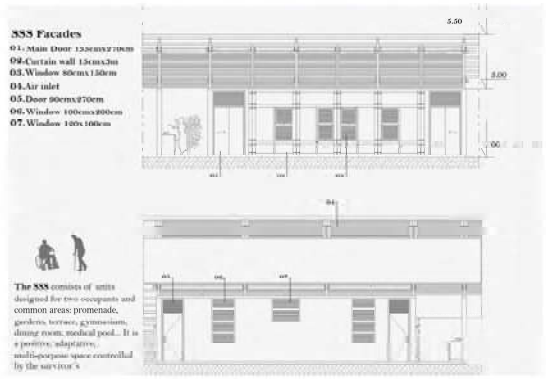
Thermal Comfort
The rammed earth walls plays a role of natural air conditioner in all seasons. They store the ambient heat during the day and release it at night. Insulated wood windows and a roof space contribute to the improvement of thermal comfort

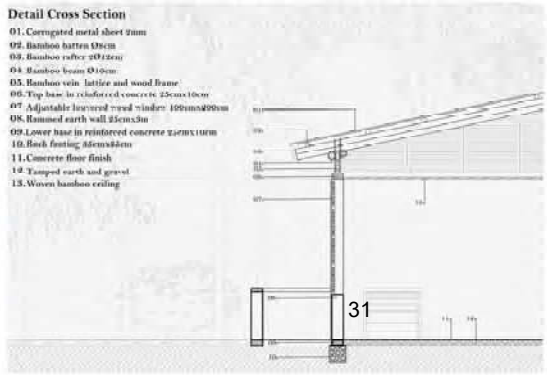


Visual Comfort
The zoning of the rooms and the orientation of the building are based on the path of the sun. The living spaces are well lit thanks to the optimization of the openings on the facades and the skylights.

Indoor Air Quality Comfort
The rooms are cross ventilatilated. The woven bamboo ceiling provides and filters the air. All this leads to a better health of the occupants.







Fifth Prize

Name of the Project: Forest Rehabilitation Villa
Location: Miura City, Kanagawa Prefecture, Japan

University: Harbin Institute of Technology
Country: China
Team Members:
Meng Chen (Leader)
Nan Jiang
Fujia Lv
Yutong Li
Hsin-Hsien Chiu (Advisor)

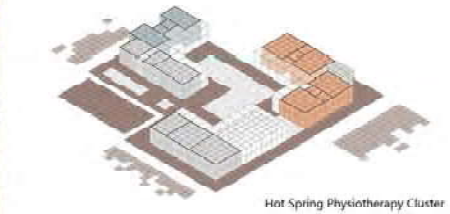
ID #: 63f2cbffdbd21
Submission folder #: 12

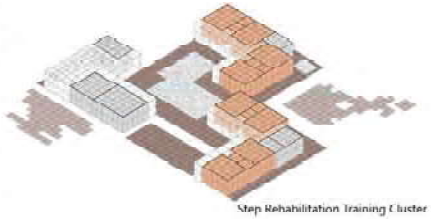
城ヶ島の森
日本・三浦・神奈川・脳卒中リハビリ中
Japan · Sanpu · Kanagawa · Stroke Rehabilitation Center

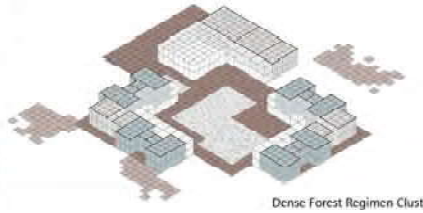
Building land area: 18154 ㎡
Ward area: 625.6 ㎡
Building area: 2321 ㎡
Building plot ratio: 0.127
Building density: 0.127
Building height: 3.6m
Number of floors: 1
Greening rate: 0.451
Number of parking spaces: 12 barrier-free parking

Prefabricated modular building

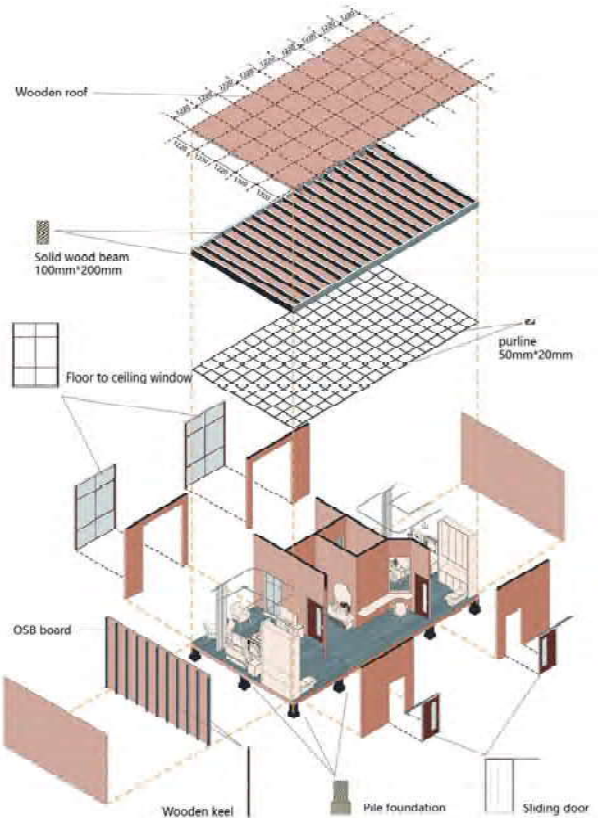
The building adopts a prefabricated lightweight wooden structure, and the ward units are formed into modules, which are convenient for transportation and construction at various stroke promotion points in the city. The building material module is 1200mm*1200mm,which is in line with the international requirements for wood assembly


Hot Spring Physiotherapy Cluster


Step Rehabilitation Training Cluster


Dense Forest Regimen Cluster

Double ward units | Modular paved floor | Malleable modular space
Single ward units | Public activity space | Supporting service space



Design Description:

The Island Stroke Rehabilitation Center is located in the city island of Sanpu, Kanagawa Prefecture, Japan.The climate here is pleasant and the vegetation is rich, which is suitable for the rehabilitation of stroke patients. This program is mainly aimed at the rehabilitation of patents in walking period to provide a basis for their return to normal social life. The scheme is composed of three basic groups, they are all modular buildings and can extend infinitely to external spaces, providing the possibility of adding more functional spaces in the future, while also better integrating into nature.These three groups are applicable to patents in different stages of waking, and has forest recuperation, hydrotherapy, picking and other characteristic therapies. Walking facilities for patients' families and local residents are also arranged in the plan. Choosing the prefabricated type can greatly save construction time, and prefabricating the same components on-site can reduce labor costs, while also facilitating future expansion of building space.


There are two peaks for stroke, one is in the coldwinter when the temperature is below 0 ℃ , and the other is in the middle of summer when the temperature is above 32℃ .According to clinical investigation, every year in July and August cerebrova scular disease attack and mortality is acmall peak.
The minimum temperature is 3.3 ℃ (in Januaryand February) 30℃ (in Augusty) which meets the requirement.

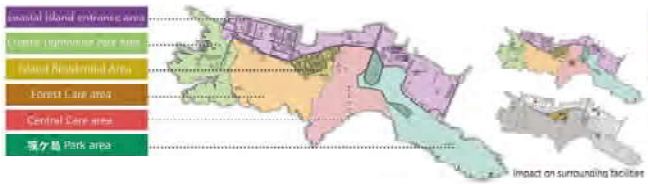
Plant & Culture Analysis

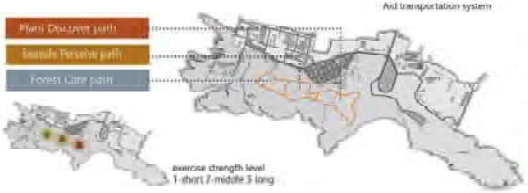

It is found that mixed coniferous forest has the best effect in farestconvalescence,because this kind of vegetation arrangement produces negative oxygen ions, which is more suitable for patients' rehabilitation.


Hot Spring Culture

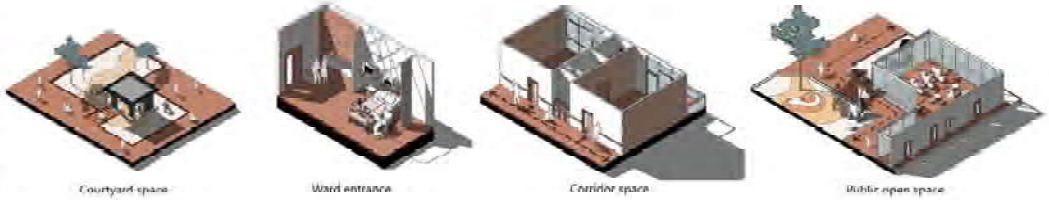
Most Japanese choose to go to hot springs for leisure time. Today there are a variety of exotic bathing methods such as "sand bath","beerbath "", "ramen bath "," pch bath "and so on. Japanese ancestors thought water could wash away diseases.


Axl transportation system





Rehabilitation in everyday life

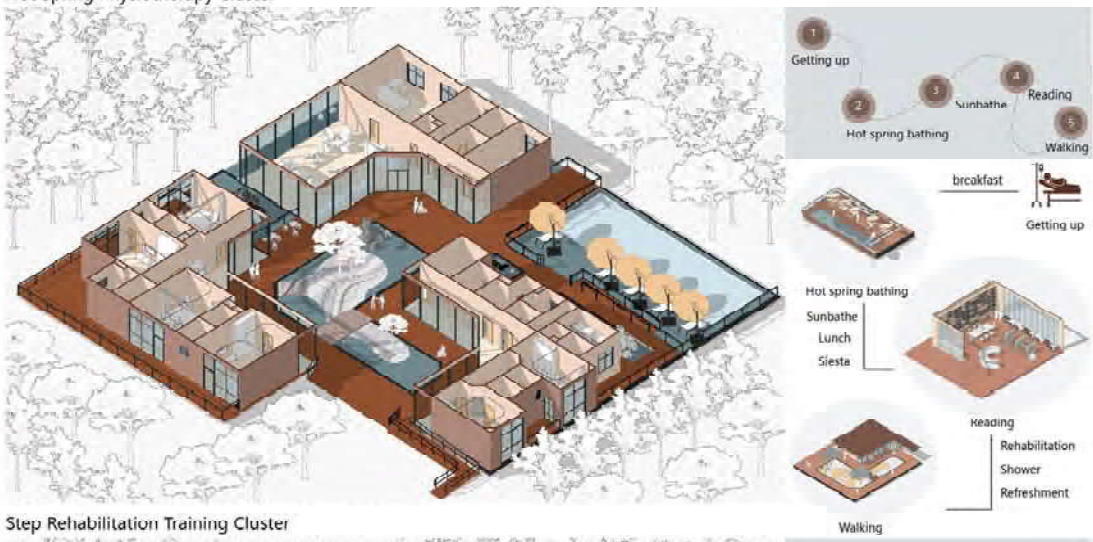


Forest restoration

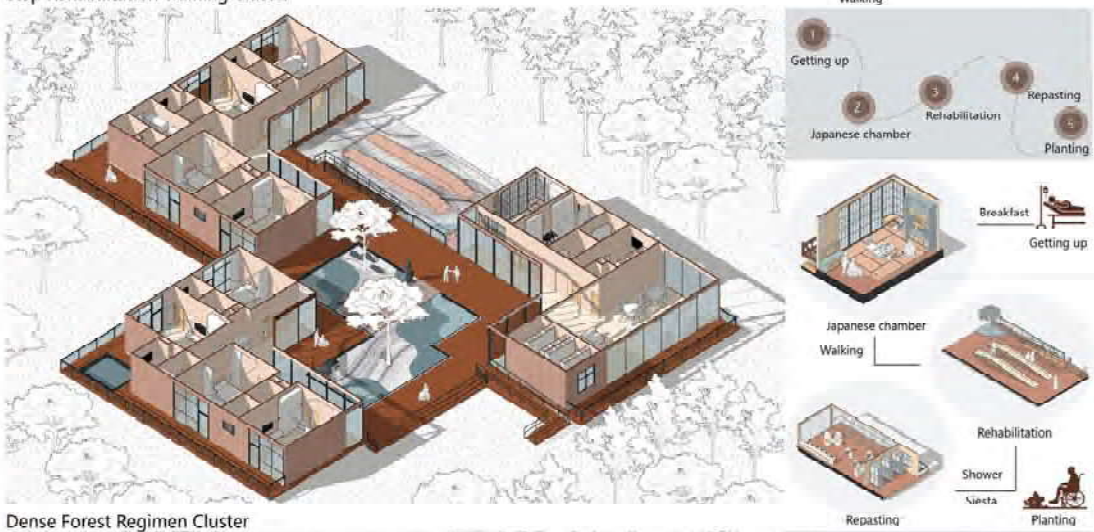
Forest recuperation is a type of landscape that has emerged in Japan in recent years with the goal of rehabilitating health care functions. The site has good forest landscape conditions, and a series of forest recuperation activities such as forest yoga, forest cleaning, touch handicrafts, etc. for stroke patients can help patients increase the absorption of negative oxygen ions and restore social life as soon as possible.

First Floor Plan 1:500

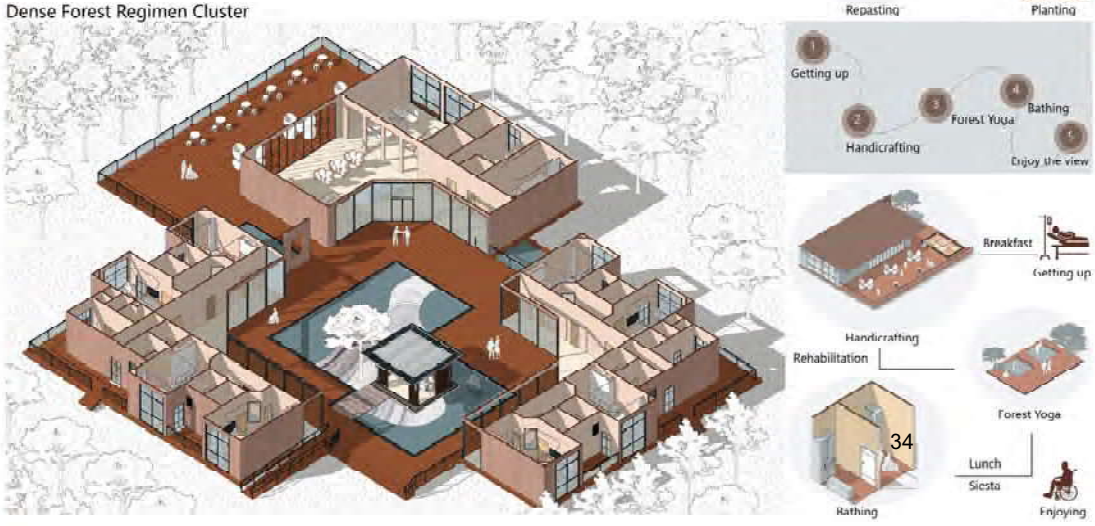
Hot Spring Physiotherapy Cluster

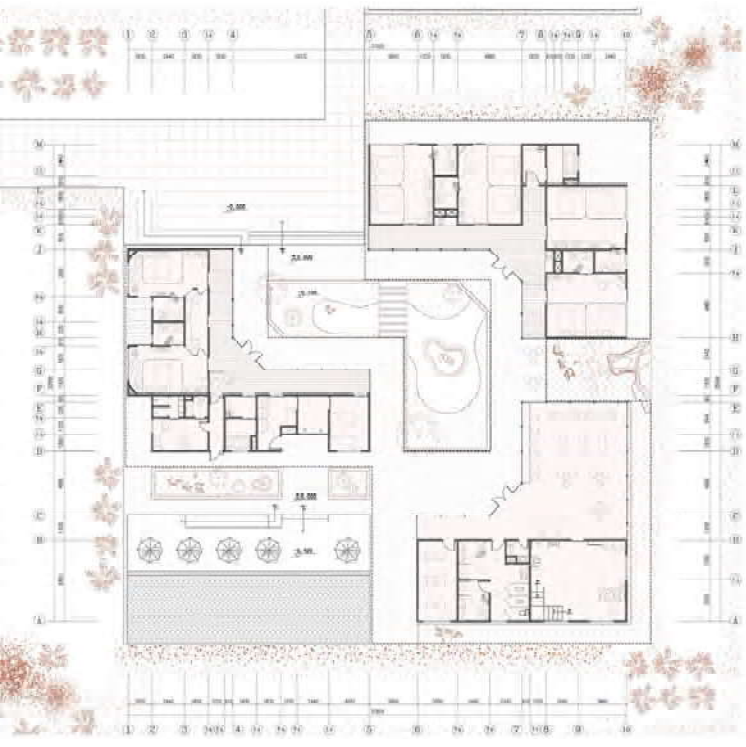


Step Rehabilitation Training Cluster

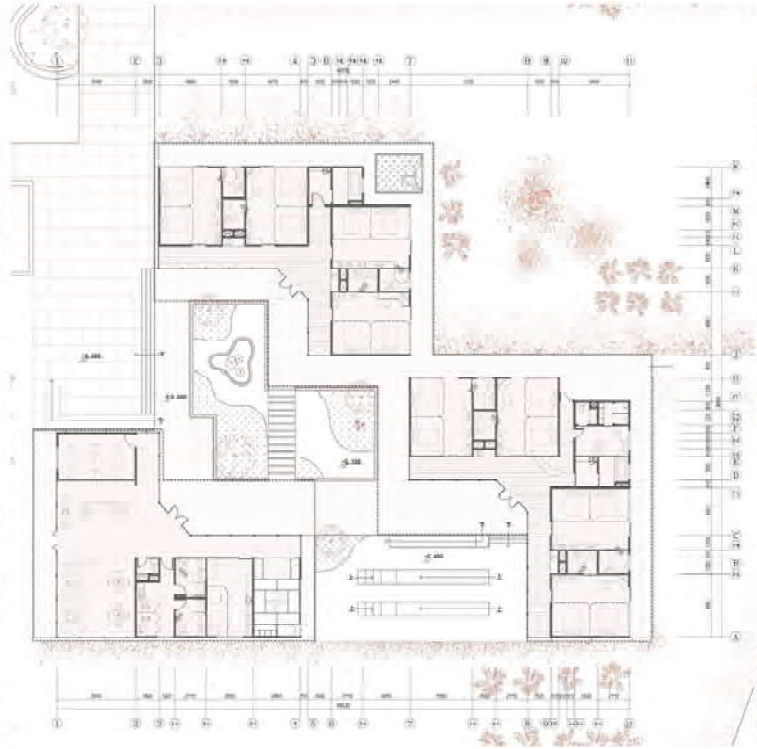


Dense Forest Regimen Cluster

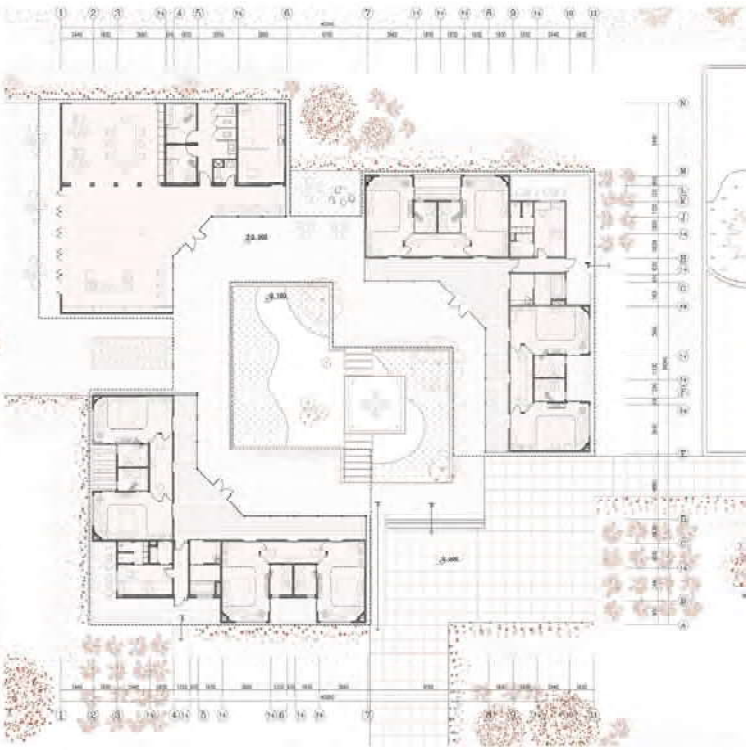




Hot Spring Physiotherapy Cluster Plan 1:200



Step Rehabilitation Training Cluster Plan 1:200



Dense Forest Regimen Cluster Plan 1:200

Hot Spring Physiotherapy Cluster Elevation 1:200

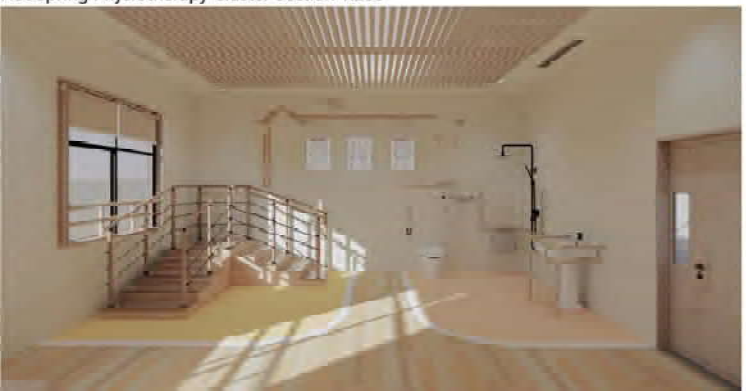
Step Rehabilitation Training Cluster Elevation 1:200

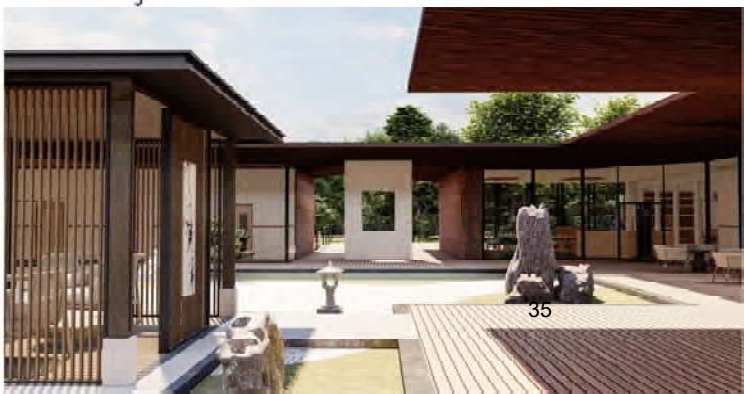
Dense Forest Regimen Cluster Elevation 1:200

Hot Spring Physiotherapy Cluster Section 1:200

Step Rehabilitation Training Cluster Section 1:200

Dense Forest Regimen Cluster Section 1:200





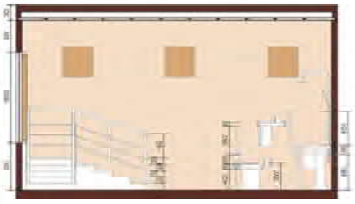
Single Ward Plan 1:50

Double Ward Plan 1:50

Rehabilitation Training Room Plan 1:50

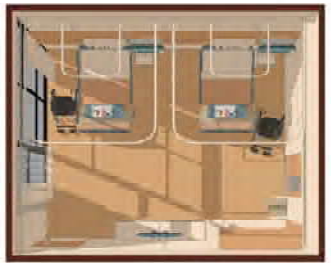
Single Ward Section 1:50

Double Ward Section 1:50



Rehabilitation Training Room Section 1:50

Single Ward 3D Plan



Double Ward 3D Plan

Rehabilitation Training Room 3D Plan

Shower

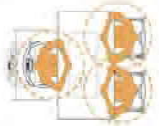
Sunbathe

Bathtub

Tatami room table

Tatami room shelf

Tatami room handrail



Speech therapy

Reading area

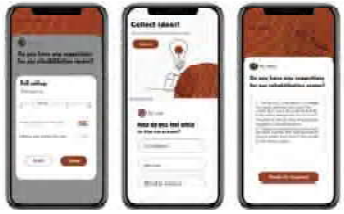
Handicrafting

NOVELL Information

	Concept	Methods	Achievements	Principles of neuroscience
Prefabricated modular building	The building is divided into several space modules, and all the equipment, pipelines, decoration, and fixed furniture in the module have been completed, and the building is assembled on site.	1. Promote the serialization and generalization of prefabricated components. 2. The construction site of prefabricated buildings only requires a small number of professional construction personnel, which improves the specialization level of construction technology.	1. The construction speed is fast, which can shorten the construction period by 50~70%. 2. Very little pollution to the environment. 3. Convenient for later expansion. 4. Only the remaining components of the construction site can be used by hoisting and connecting pipelines.	1. Our brains change with age. 2. Our brains change with the environment. 3. We can measure the brain's response to the environment. 4. Our brains change according to our emotions. 5. Our senses connect our brain to our environment.
Participatory design	During the construction process, Chinese medical workers, patients who have used the stroke rehabilitation center, patients' families, visiting personnel, nursing workers, etc. participated in the design to help users improve the traditional space experience.	1.physical environment:integration with surrounding communities 2.Clinical practice and efficiency:Stroke unit is unnecessary 3.Emotional health: connection with outdoor space	1.Set up re employment sites in communities to help patients integrate into society. 2.No central nurse station is set up, and it is set up separately in each group. 3.Create enclosed courtyards to facilitate patient contact with outdoor spaces.	
20 minute life circle	Make sure that people can get everything they need within a 20 minute radius by walking, cycling or taking public transport.	1. Join the propaganda point of stroke prevention knowledge in combination with the original building. 2. Implant the center physical examination function in the existing medical buildings.	"Medical treatment, health care, prevention and rehabilitation" compound community	

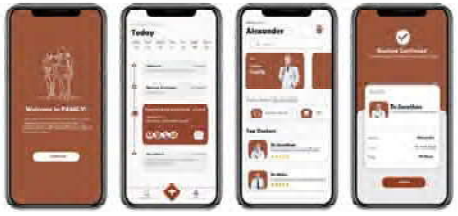
Mobile interface demonstration

Questionnaire investigation



Treatment appointment

Family monitor patients

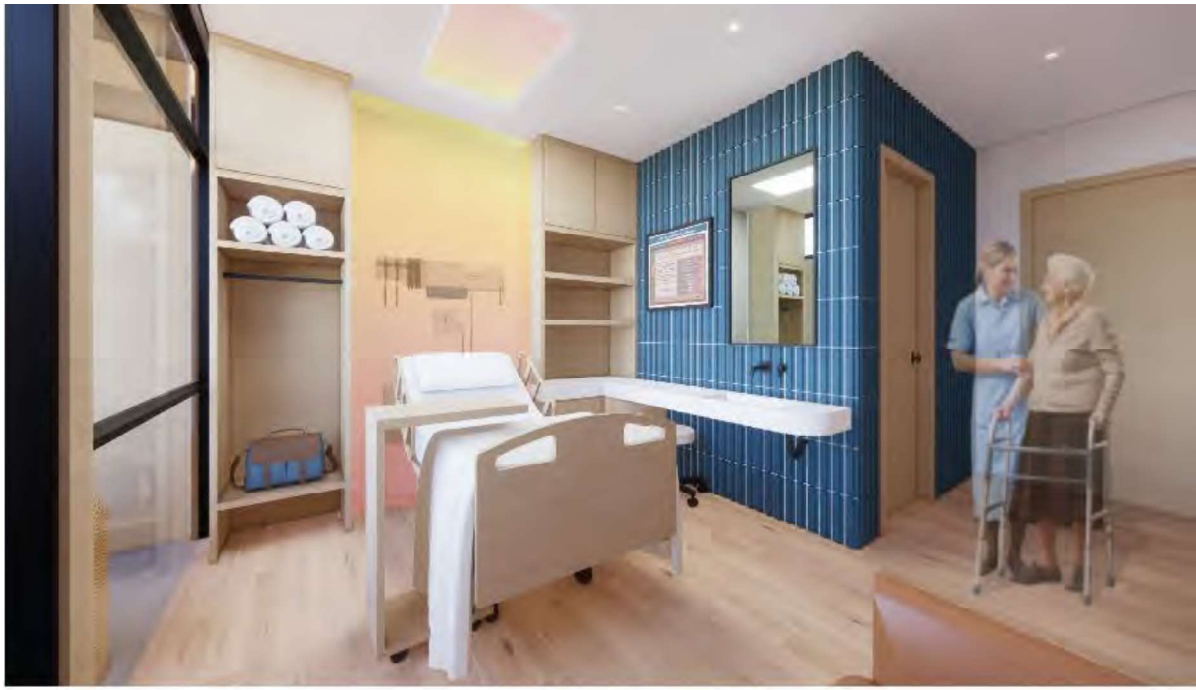


Honorable Mention

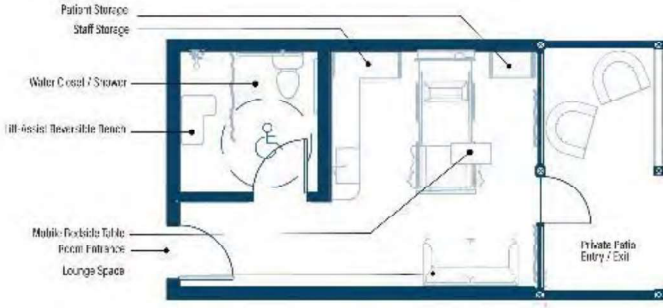
Name of the Project: Riverside Recovery
Location: San Antonio, Texas, USA

University: The University of Texas at San Antonio
Country: USA
Team Members:
Dana Martinez
Ariana Gomez
Narda Parga Moreno
Neda Norouzi (Advisor)

ID #: 640fce1f4a832
Submission folder #: 20



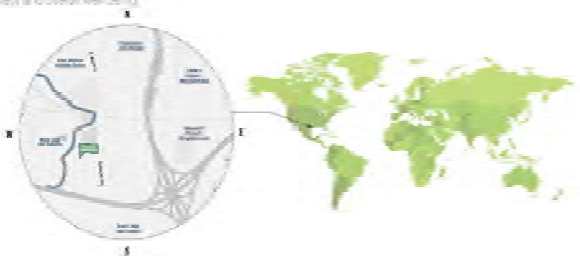
MATERIALS + FINISHES



RIVERSIDE RECOVERY

COMMUNITY INPATIENT STROKE SURVIVOR TREATMENT & RECOVERY CENTER

The Riverside Recovery Center is an inpatient stroke rehabilitation facility in San Antonio that focuses on the path of recovery and new life for stroke survivors. The programs here and its surrounding natural elements symbolize healing and the unification between occupants, architecture and nature. To promote a safe and welcoming environment for occupants evidence-based design principles merge with the concept of architecture for all to influence wellness, safety and overall well-being.



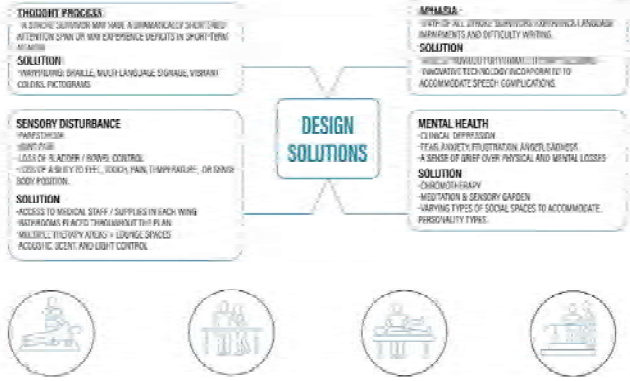
SAN ANTONIO DEMOGRAPHICS

- 85% Hispanic or Latino
- 24% White
- 7% Black or African American
- 3% Asian
- .1% Native Hawaiian & Pacific Islander
- .7% American Indian & Alaska Native [2]

1,451,853	156,173	13%
Population	Senior Citizens	Death by stroke

52% Male

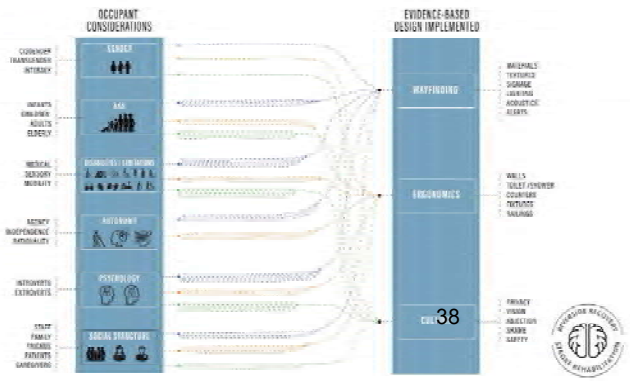
48% Female [3]



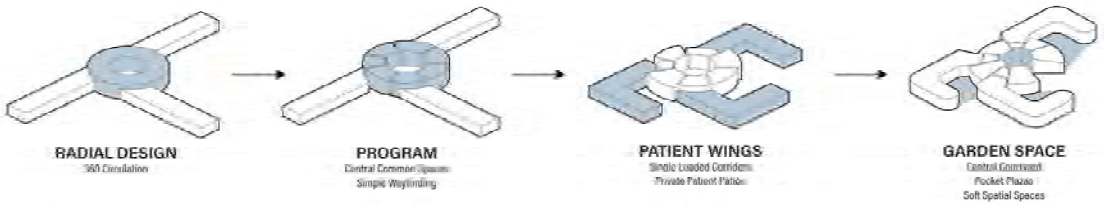
REHABILITATE - CARE - GENUINE HUMAN CONNECTIONS

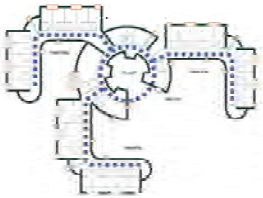
SITE ANALYSIS - 421 GROVE AVE. SAN ANTONIO, TEXAS 78210

RIVERS SYMBOLIZE LIFE, FERTILITY, FREEDOM, A PATH, AND THE PASSAGE OF TIME.



DESIGN + LAYOUT FOR STROKE RECOVERY



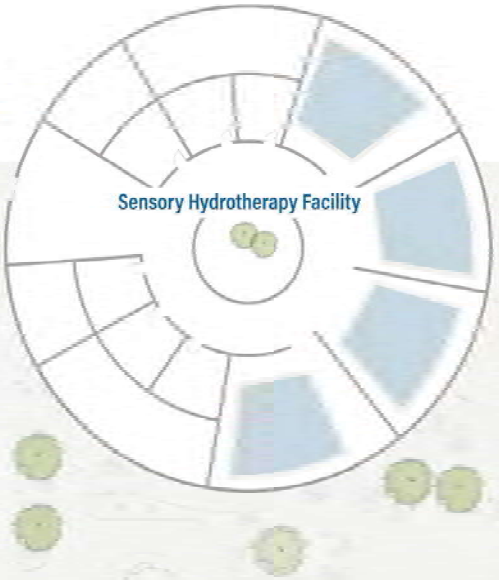


CIRCULATION

Main path of travel

Minor path of travel

Exterior access



SINGLE FLOOR + CENTRAL PLAN

Radial, asymmetrical, and single-story configurations have the least amount of wayfinding problems [3, 5] fall-related injuries are reduced when stairs are not present [2]

INDIVIDUAL PATIENT ROOMS

Support patient-family-staff privacy. Shared rooms impact quality of night-time sleep, increase chances of infectious spread, and can negatively effect patients mental-health [4, 6]

SINGLE-LOADED CORRIDOR

A space to socialize, practice walking mobility, view the outdoors, and provide daylight [10] Patients spend over 70% of their time socializing in the corridors, oversized corridors allows them to actively socialize while walking or lounging without impeding staff work.

GARDEN THERAPY

Implemented to provide a multi-sensory experience, increases socialization, and sense of community [9] Local flora was selected with xeriscaping techniques to minimize maintenance requirements and attract local fauna such as birds, small animals and insects.

PATIENT LOUNGE SPACES

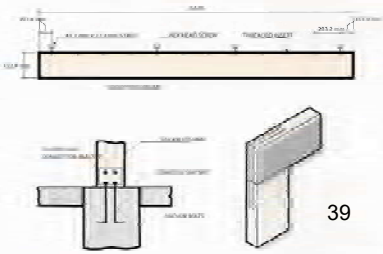
Common areas near patient rooms invite patients to engage outside of their rooms [8, 11] and opportunity to practice ADLs (Activities of Daily Living).

ACCESSIBILITY WITH COMFORT

Generously sized corridors to maximize patients ability to get to spaces of 3.5 meters enough to comfortably fit two wheelchairs for the patient wings.

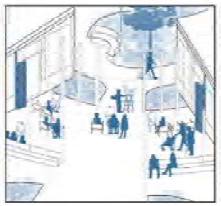
GULAM BEAM + COLUMN DETAILS

Use of wood in healthcare settings is becoming more prominent due to its warm and comforting properties. Being in the presence of wood structures have shown to reduce stress levels and anxiety. [ ]



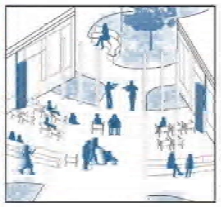
ACTIVE + FLEXIBLE DESIGN

PROMOTING MOBILITY WITH ARCHITECTURE



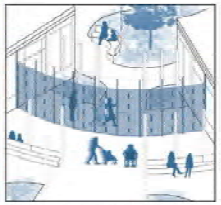
COMMUNITY SPACE

A space where patients, guests and staff can engage in social activities provided by rehabilitation facility. Rotating events like performances and group therapy sessions encourage stroke survivors to interact outside of their scheduled rehabilitation sessions. [11]



PAINTING

Group therapy can take place in the **open air community space.** Different creative specialists are welcomed to teach stroke patients a variety of hands-on crafts.

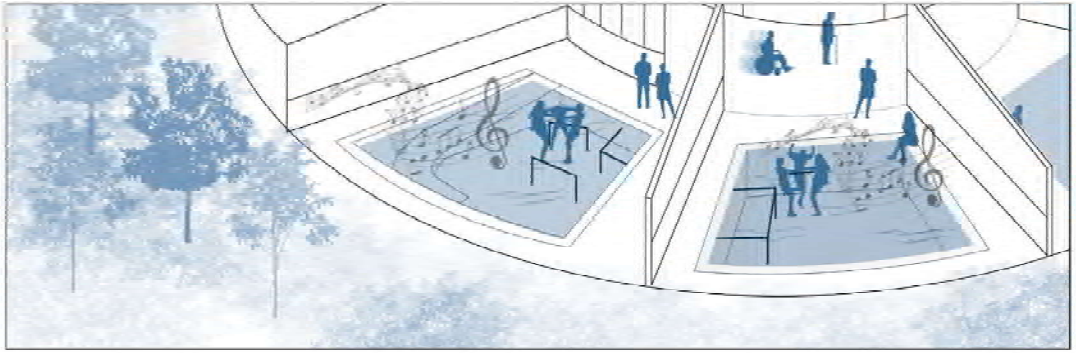


PERFORMANCE

Bringing in classical performances such as violinists can gather stroke patients, family, and staff members in this community space. Patients have a lot of unscheduled time so providing activities can help pass time and **reduce stress and anxiety.**

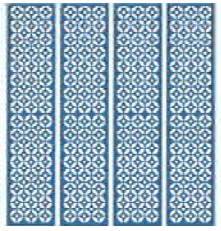
SAFETY

The panels are closed during non-activity hours and when staff is not present in the space. This gives the patient a **sense of safety** while walking around the enclosed facility.



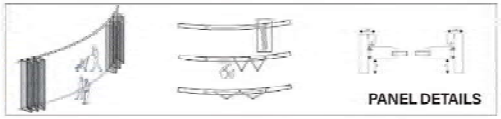
HYDROTHERAPY AND SENSORY TREATMENT

Innovative addition for this clinic includes a hydrotherapy center with **underwater music** and a **sauna** room for group **yoga**. Hydrotherapy in conjunction with traditional land therapy is an **effective low-impact way to reduce pain, improve balance**, and is **less strenuous than static physiotherapy**. [20]



ACCORDION-STYLE BREEZE PANELS

Inspired by the **prominent presence** of **Mexican-American culture** in San Antonio. When fully open, they allow the **prominent southeast winds** to enter the heart of the facility and acts as a **flex space** to engage the **exterior with the courtyard.**



PANEL DETAILS

SENSORY GARDEN

The sensory gardens placed throughout the facility gives patients the ability to engage their five senses and allow therapeutic scents and sounds for everyone. [9]

EXTERIOR PLAZA

The site design of the facility includes **trail-like landscapes** and **sensory gardens** throughout that offer seating and pergolas for patients, family, and staff. **Positive distractions** like nature can create a sense of **motivation** to interact with the outdoors. [12]

INNER COURTYARD + SANCTUARY

The inner courtyard is the heart of the facility that provides lush landscape views to the patients all around, and has a serene space for patients to get away.

NATIVE PLANTS

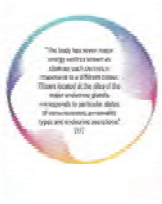
Combining **Xeriscaping principles** and native plants to achieve a low maintenance landscaping design

SHRUBS	TREES	PLANTS
Mexican Skullcap	Texas Red Bud	Red Yucca
Wright's Skullcap	Guajillo	Firecracker Fern
Artemisia	Huisache	Pride of Barbados
Texas Sage		Thryallis
Velvet Mallow		

WEST-EAST BUILDING SECTION 1:100

1. *Motor impairment is the most common deficit after stroke (Lui & Nguyen, 2018).*
2. *Falling injuries are higher in stroke elders (Lui & Nguyen, 2018)*
3. *Spatial configurations with the least amount of wayfinding problems are radially designed facilities (M. Kevačija, 2021)*
4. *Shared rooms were seen to negatively impact activity during the day because of impaired quality of night-time sleep (H. Jansson et al, 2022*
5. *Patients make errors when exiting the elevator since all floors are arranged in the same way. Compact and symmetric layout ...might have contributed to challenging wayfinding (Kevačija & Marquardt, 2021)*
6. *22 studies found SPRs (single person rooms) had clearly significant effects on patient satisfaction, noise/sleep quality, and privacy, with mixed results for infection rates. (Taylor, Card, Fleitkowski, 2011*
7. *Motor impairment is the most common deficit after stroke (Lui & Nguyen, 2018)*
8. *Falling injuries are higher in stroke elders (Lui & Nguyen, 2018)*
9. *Therapeutic gardens increases sense of socialization, self-esteem, and life satisfaction. For all users of the garden, including the partially sighted, wrinkled and brightly colored flowers and leaves provide an attractive sensory experience. [8,7] (Bourgeois et al, 2020).*
10. *Although the corridor is traditionally used as circulation space, in the context of dementia in rehabilitation clinics it also becomes a space where patients socialize, maneuver, enjoy the view, enjoy the solitude, walk around and perform other activities. (Kevačija & Marquardt, 2021).*
11. *Staff reported that group activities were rarely offered (H. Jansson et al, 2022)*

PATIENT SUITES EMPOWERMENT THROUGH INDEPENDENCE



"The body has seven major energy centres known as chakras; each chakra is responsive to a different colour. Those located at the sites of the major endocrine glands correspond to particular states of consciousness, personality types and endocrine associations" [17]

3

PATIENT WINGS

Private rooms **house single patients,** provides a **private space for guest interaction,** and acts as a **consulting/ exam room**

10

SUITES PER WING

- Private **lounge space**
- Private **bathroom**
- Private **patio space**
- Each room has a **unique view** of sensory gardens and river front

MAIN ENTRY / RECEPTION

Lighting selections chosen based on **efficiency, functionality and capabilities.** Fixtures have **dimmable capabilities** and **occupancy detection.**

PATIENT ACCOMMODATION WINGS

Color in Healthcare Settings - Materiality and color can be used to create comfortable environments **reducing stress and anxiety.** Color **deficiency** can cause **sensory deprivation** and **boredom.** [12] Wayfinding is provided via **pictograms, maps, braille, signage, color-coding, symbols,** and other **environmental cues.** Promoting **patient's autonomy** during their stay and reducing the chances of patients becoming lost in the facility.

DINING SPACE/ NOURISHMENT AREA

Positive Visual Distractions [13]

Open common areas have positive distractions such as **exterior views, nature elements** placed throughout the interior, **simplistic artwork reflecting the environment they live in,** access to **television, books and magazines,** a **nourishment area** with snacks, water and tea.

STAFF WORK + LOUNGE SPACE

Separation from **caregiver and patient space reduces stress** for caregivers **allowing privacy** for HIPPA concerns and **acoustic control** in work spaces.

Ⓐ **Upper storage** cabinets for staff and **discreetly** hides **mechanical equipment** for patient safety

Ⓑ **Closet space** for patients personal belongings with **accessible spaces** accomodating for patients with **limited mobility.**

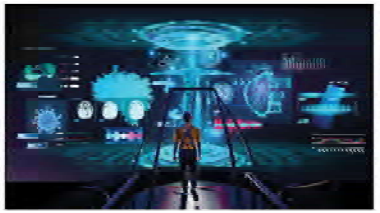
Ⓒ Private **secluded patio space** for patients and their guests.

Ⓓ Patient bed placed **further away** from the corridor to **reduce noise disruption** while also allowing patients to see access points to the room for **psychological comfort.**

Ⓔ Private **water closet** and **shower** enclosed for **visual privacy, acoustic** and **scent control.**

LIGHTING DESIGN + CHROMOTHERAPY BENEFITS

The lighting in patient suites provides **focused, glare-free illumination** for patient rooms and is designed to create a **calm, comforting environment.** The **recessed fixtures reproduces natural light patterns and colors.** Exposure to light has important effects on **human physiology** that are **independent of visual perception.** These **non-image forming effects** of light include the **regulation of circadian rhythms, melatonin production, changes in core body temperature, sleep propensity,** and **alertness.** [16]

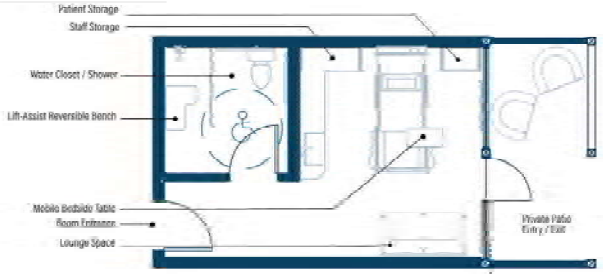


VR THERAPY

"Virtual reality (VR) seems to be an **alternative to conventional physiotherapy** (CT), providing virtual environments and multisensorial inputs to train balance in stroke patients" [19]

MATERIALS + FINISHES

1. High Pressure Laminate | Faux Concrete
2. High Pressure Laminate | Wood
3. Polysafe Stone fx PUR | Jurassic Stone
4. Interface, LVT | Textured Woodgrains, Hemlock
5. Stratum Blue Matte 3D Wall Tile
6. Isola Capri Polished Ceramic Tile
7. Speckled Blue Quartz Countertop
8. Home Block Galaxy Quartz Countertop



PATIENT SUITE PLAN

PATIENT SUITE SECTION 1:50

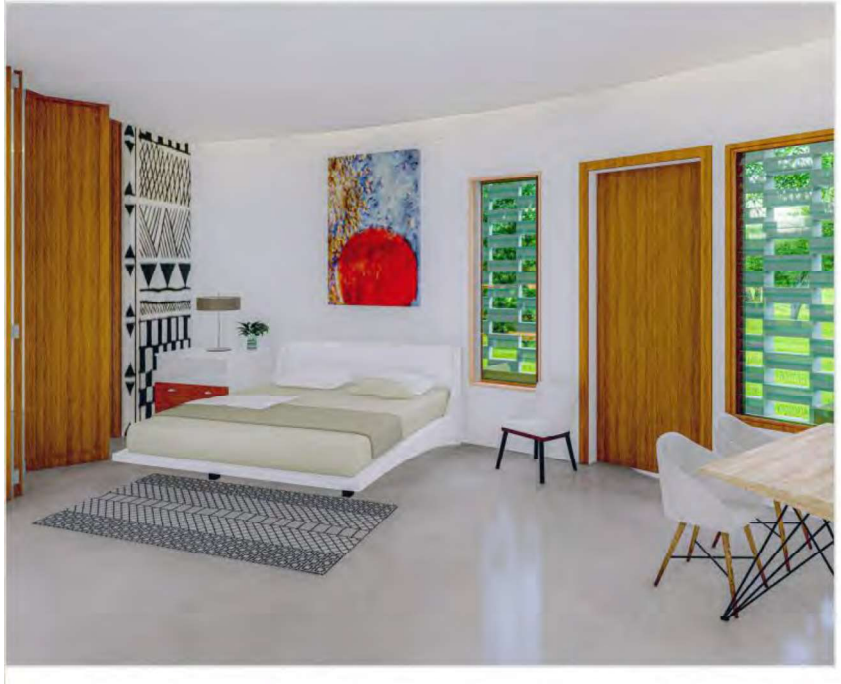
12. *Using Positive Visual Distractions and Color in Healthcare Settings to Reduce Patient stress & increase patient satisfaction (Dahlkild, 2017)*
13. *Why hospital design matters: A narrative review of built environments research relevant to stroke care (Bernhardt, et al., 2021).*
14. *Design suggestions of the Clinical Upper extremity rehabilitation equipment for stroke patients (Chen & Huang, 2018)*
15. *Magennad, Gagennell S. · White, Brandi M., Ellis, Charles. Stroke-Related Disease Controllability and Secondary Stroke Prevention Practices Among*
16. *Alhazzo, A., Smith, R., Fiance, D. A., Yanuk, J. R., Berryhill, S. M., Fridman, A., Shane, B. R., Knight, S. A., & Rodgers, W. D. (2016). Exposure to Blue Light increases Subsequent Functional Activation of the Prefrontal Cortex During Performance of a Working Memory Task. Sleep, 39(9), 1671–1680. https://doi.org/10.5665/sleep.6096*
17. *zeenni, S. T., & Raza, S. M. (2005). A critical analysis of chromotherapy and its scientific evolution. Evidence-based complementary and alternative medicine : eCAM, 2(4), 481–488.*
18. *"Post Stroke Foot Short", NINDS, Publication date April 2020. NIH Publication 20-NS-4848.*
19. *Cortés-Pérez, I., Nieto-Escamez, F. A., & Obrero-Gaitán, E. (2020). Immersive Virtual Reality in Stroke Patients as a New Approach for Reducing Postural Disabilities and Falls Risk: A Case Series. Brain sciences, 10(5), 296. https://doi.org/10.3390/brainsci10050296*
20. *Pérez-de la Cruz S. (2020). Comparison of Aquatic Therapy vs. Dry Land Therapy to Improve Mobility of Chronic Stroke Patients. International journal of environmental research and public health, 17(13), 4728. https://doi.org/10.3390/ijerph17134728*

Honorable Mention

Name of the Project: Kumasi Stroke Rehab Center
Location: Kumasi, Ashanti Region, Ghana

University: Kwame Nkrumah University of Science and Technology
Country: Ghana
Team Members:
Harriet Asamoah (Leader)
Nuhu Shuaib Abekah
Yiho Sare Yaboure Aristide Kevin Daouda
Philip Chinwendu Jason
Oliver Ackumey

ID #: 63a3676d4a13b
Submission folder #: 164



STROKE SURVIVORS' REHABILITATION CENTER

Concept and Form Development

Designing a rehabilitation center for stroke survivors which is a complex and challenging task that requires a deep understanding of the needs of the users and the cultural context in which it is located.The proposed design for the rehabilitation center features a community within a healing garden. The central hub of the community serves as an outdoor space for patients to relax, socialize, and exercise. The landscaping of the rehabilitation center provides opportunities for gardening, which has been shown to be a therapeutic activity for stroke survivors. The central hub which includes an angel illmaitre is surrounded by three main facilities which would be constructed with Compacted Earth Block (CEB) and bamboo as the main roofing members. This design approach would not only promote sustainability but also incorporate local building materials that reflect the culture of Africa.The facilities are designed with the patients' needs in mind, with ample spaces for physiotherapy, speech therapy, occupational therapy, and counseling.

The interior of the facilities are designed with warm and welcoming colors such as browns, which creates a sense of comfort and tranquility for the patients. The use of natural materials such as wood and bamboo also adds warmth to the interior spaces and create a connection between the interior and exterior spaces. The rehabilitation center is designed with sustainability in mind, with water harvesting systems, and composting facilities.The designs also incorporates waste harvesting systems that collect rainwater for irrigation and other non-potable uses.The composting facilities provides a sustainable solution for waste management, reducing the environmental impact of the facility.

Site with numerous trees

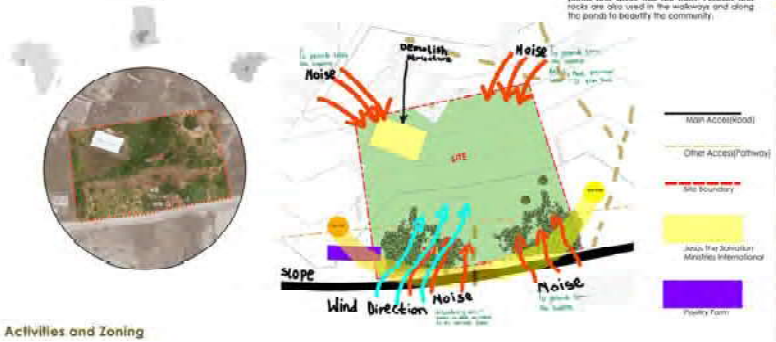
Creating of social spaces and landscapes(healing garden) to help in the healing process of the survivors .

Using circular and Manuaba forms with courtyards, this is a common feature in the traditional Northen community of Ghana. The courtyard system promotes socialition, unity and a sense of security among the people.

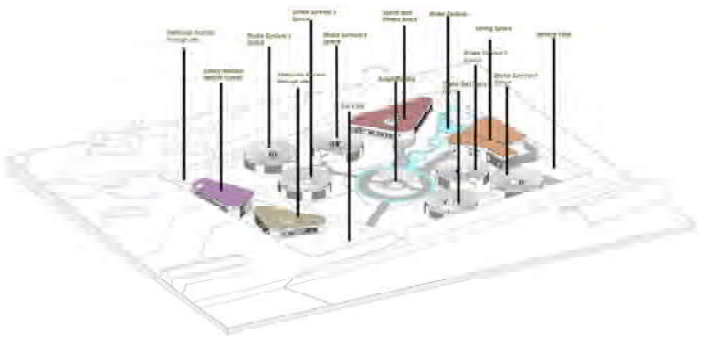
The building forms are placed together to form a community within a nesting garden. The nesting garden is made up of bright colored flowers

main dominating colors of the garden include purple, red and yellow. These colors are used because they aid in boosting the energy of the patients psychologically. Water features such as ponds and water falls are used. Pebbles and rocks are also used in the walkways and along the ponds to beautify the community.

Site Location and Analysis



Activities and Zoning

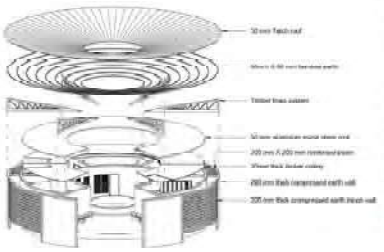


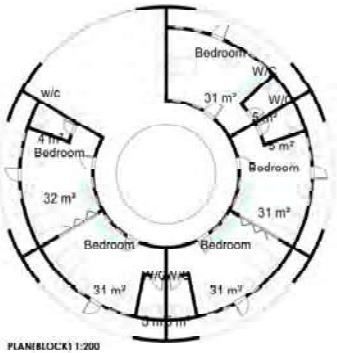
STROKE SURVIVORS' REHABILITATION CENTER

KUMASI
GHANA

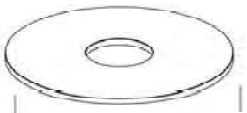
The stroke survivor's space was made in the form of a courtyard with enhances unity and foster the sense of security was used to help the survivors socialize and interact. This makes them gain the courage to the imprve on thmselves and also protect one another.

The roof is elevated with use of wooden truss to create passive cooling and reduce solar ingress. It also help in rainwater harvesting which can be used for non-portable activities like irrigation etc.

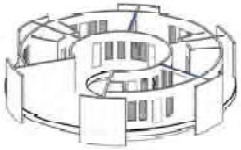




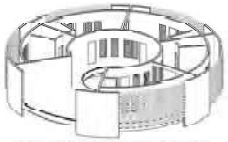
PLAN(BLOCK) 1:200



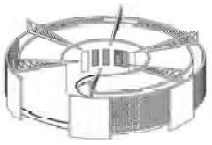
The design made use of a common circular form



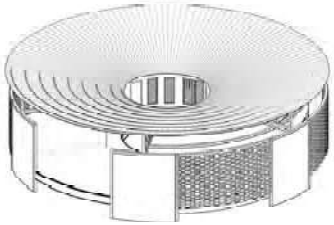
Internal Partition is introduced to allow privacy but allow to people to adjust their partition for communication



Vent are introduced at the terraces to diffuse light and sofeguard the patients whiles having site vrenty



Wood trusses are used to hold firm the upcoming roof and hele cool the space



The roof is the allow to slope inside to allow rainwater harvesting. It is also raise to allow passive cooling within the space

Honorable Mention

Name of the Project: Reinvigorate Center
Location: Abu Dhabi, United Arab Emirates

University: University of Sharjah
Country: United Arab Emirates
Team Members:
Salma Essam Eldin Anwar (Leader)
Ameera Abdallah Anas
Muna Mohamed Elsadig

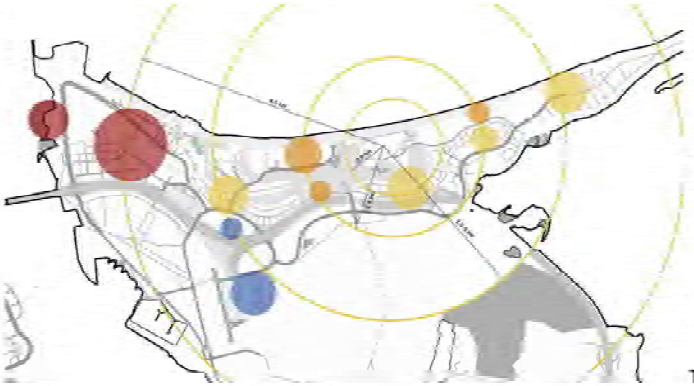
ID #: 631cae67d5e48
Submission folder #: 32

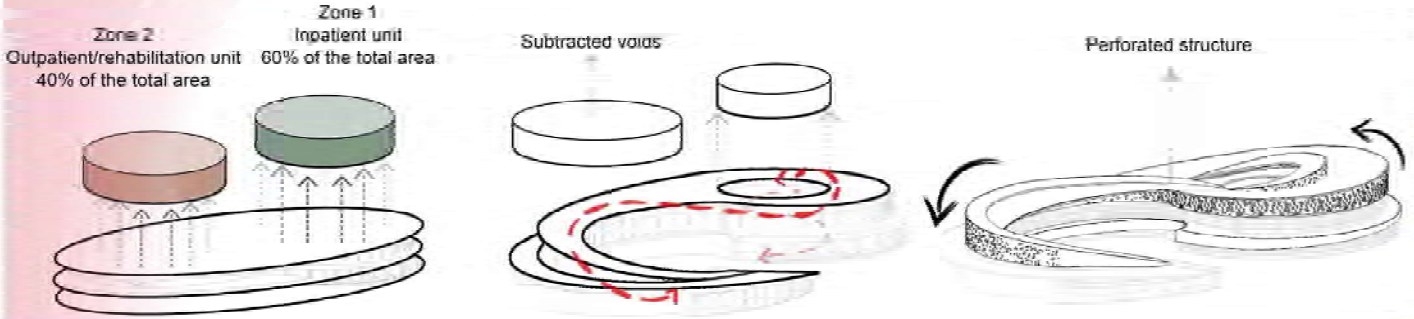
REINVIGORATE CENTER PROJECT

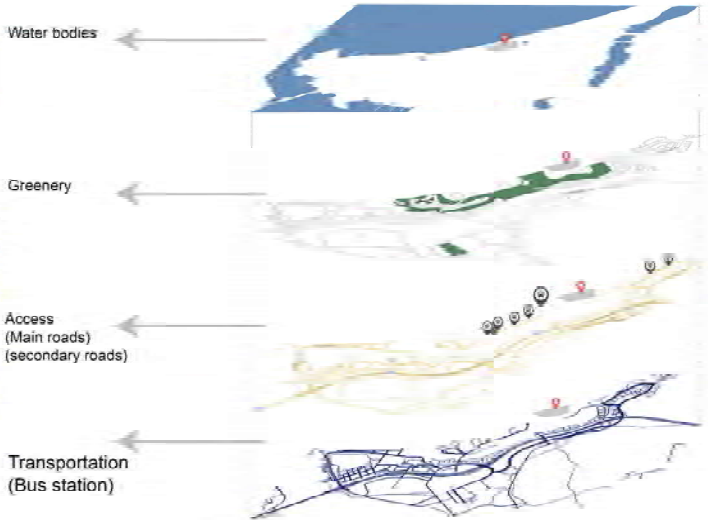
Our concept behind the design was based on several parameters that consider and integrates the **physical and psychological aspects** in design to help in the stroke survivor's healing progress. Choosing a **curvilinear form** was meant to ease the **Stroke survivor's wayfinding inside the space**, this is by deriving away from typical healthcare rectilinear designs that have several repetitive corridors.

To both reduce the confusion caused from repetition and to give the Stroke survivors their personal control over the space, **A ramp was designed** to take the stroke survivors from the inpatient unit from the first floor to the outpatient/rehabilitation unit in the underground level. Having one clear path will allow Stroke survivors and their families to easily circulate and move from one space to another.

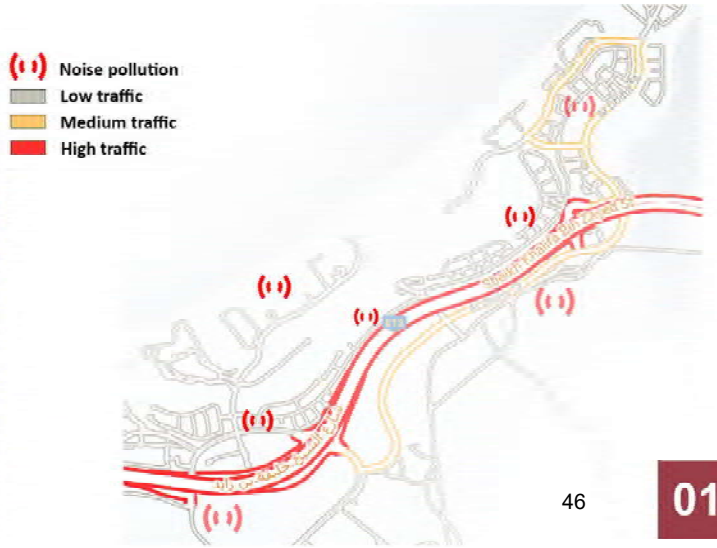
A structure revolving around the mass was added to amplify the curves and to be used to direct daylight in an indirect way to different spaces within the centre. **The structure is treated with perforations to add to the dynamic effect of shadows caused by daylight.**

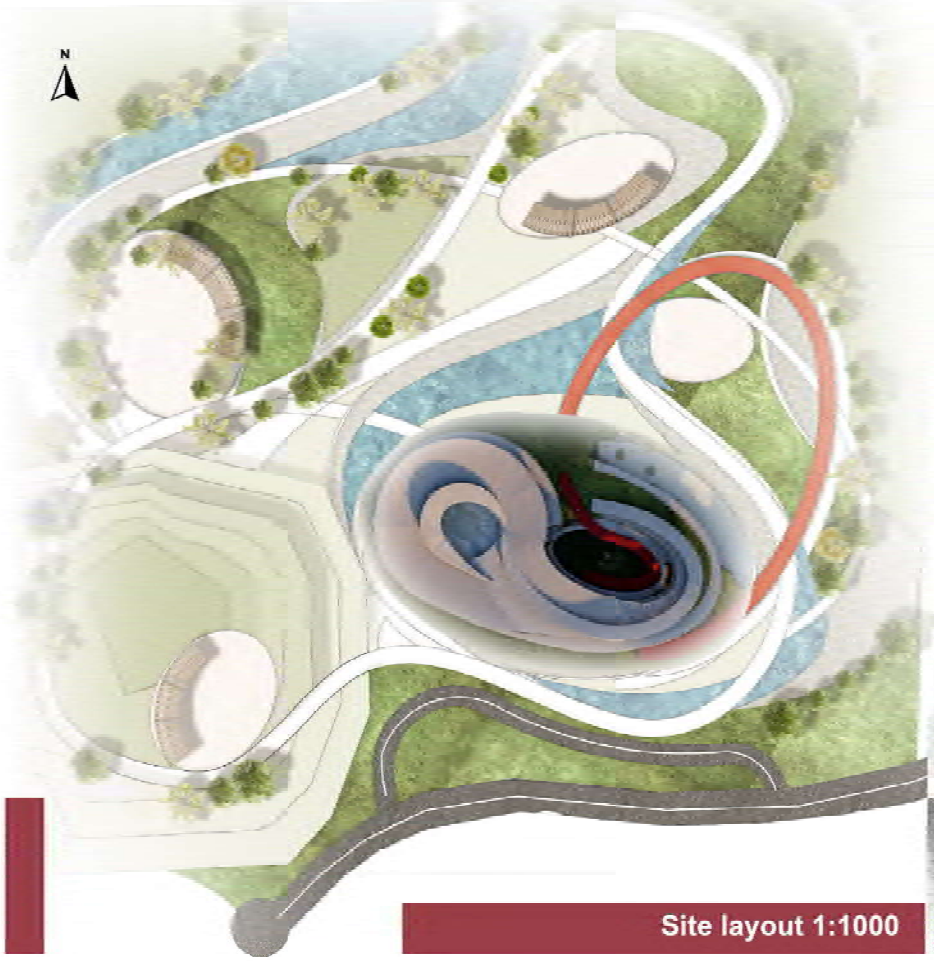






The motivation behind choosing a site in Abu Dhabi relates to its vision in 2030, where it aims to position Abu Dhabi as an international destination for medical tourism. Furthermore, the unique nature of the site and the surrounding that includes the gulf sea and a golf yard helps in constantly connecting the stroke survivor to the nature, hence, affecting their psychology positively and fasten the recovery.





Site layout 1:1000

Bridge

Pedestrian walkways

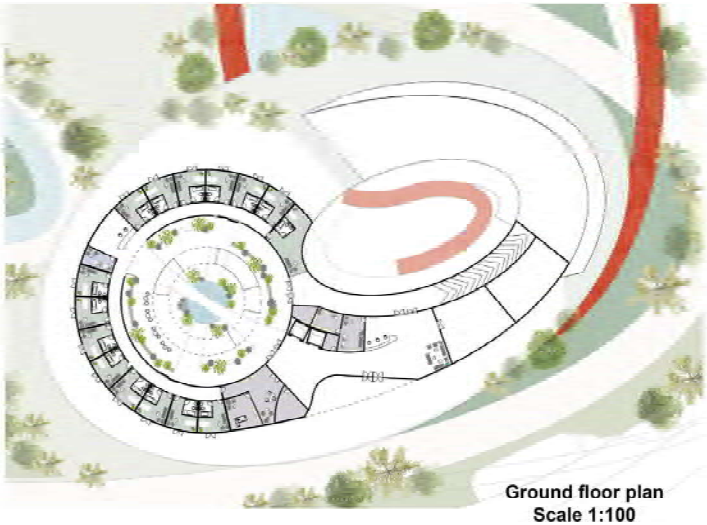
Pavement

Water bodies

Recessed active spaces

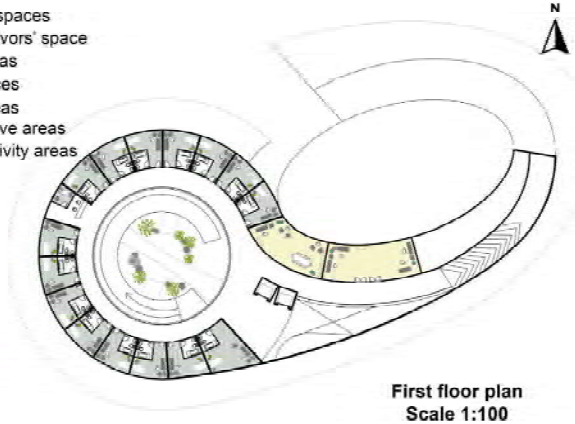
Greenery

Landscape layers

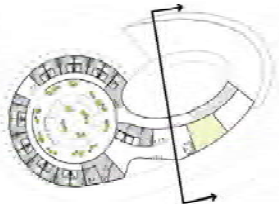


Ground floor plan
Scale 1:100

- Circulation spaces
- Stroke survivors' space
- Support areas
- Family spaces
- Therapy areas
- Administrative areas
- Outdoor activity areas



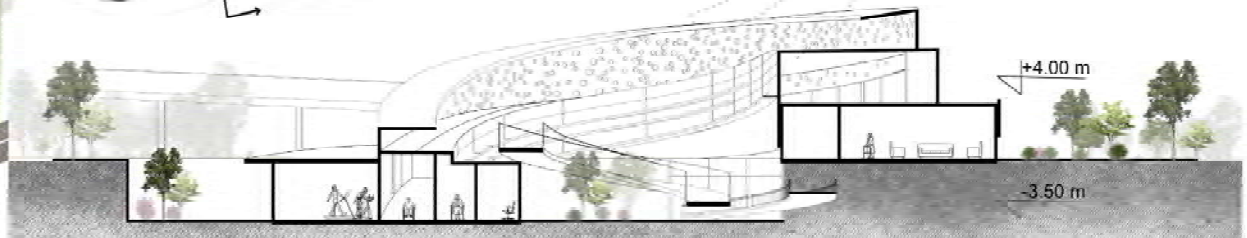
First floor plan
Scale 1:100



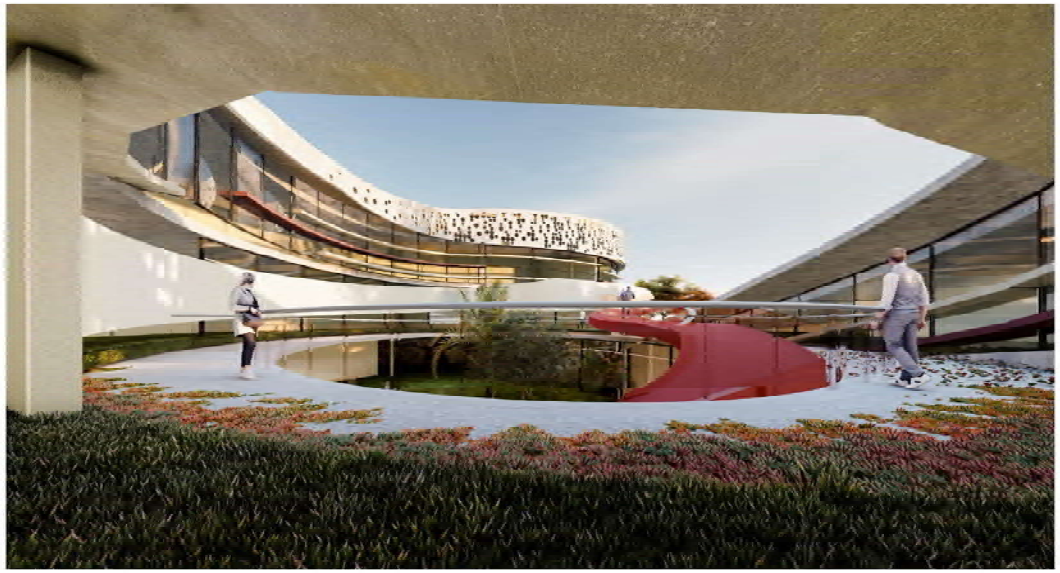
Underground floor plan
Scale 1:100

- Circulation spaces
- Stroke survivors' space
- Support areas
- Family spaces
- Therapy areas
- Administrative areas
- Outdoor activity areas

Total floor area: 4200 m^2

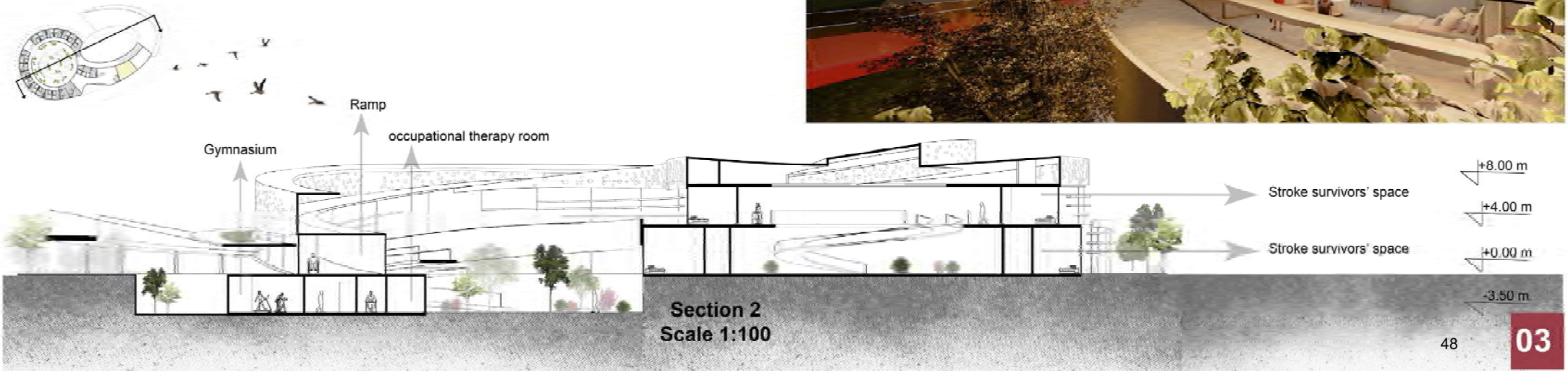


Section 1
Scale 1:100



One major step in designing the rehabilitation centre took into consideration several NOVELL Redesign core concepts. And the step was subtracting voids to create central nodes within the space. Having clear and unique spaces will give the Stroke survivors their personal control over the social and interpersonal experience by treating these spaces as landmarks within the centre. Hence, improving their wayfinding will support their choice, flexibility, and social activity. Choosing to subtract masses to create semi-open courtyards not only was to engage the Stroke survivor with the community and the real world, but also to give them the opportunity to connect to nature, active, positive, and stimulating environment. Furthermore, having semi-open courtyards will help improve the sightlines of the survivors to see key spaces inside the centre.

Taking into account the survivor's long stay inside the rehabilitation made us derive away from typical healthcare layouts and forms to positively affect the healing process of the survivors. This is by creating an environment that helps in reminding them that they are not there to only rehabilitate. Healthcare environments tend to increase stress levels of survivors because it constantly reminds them of their medical condition. This is solved by using different colours, materials, levels, using smooth and curved lines in the form, and integrating daylight.



Section 2
Scale 1:100

Perforated structure

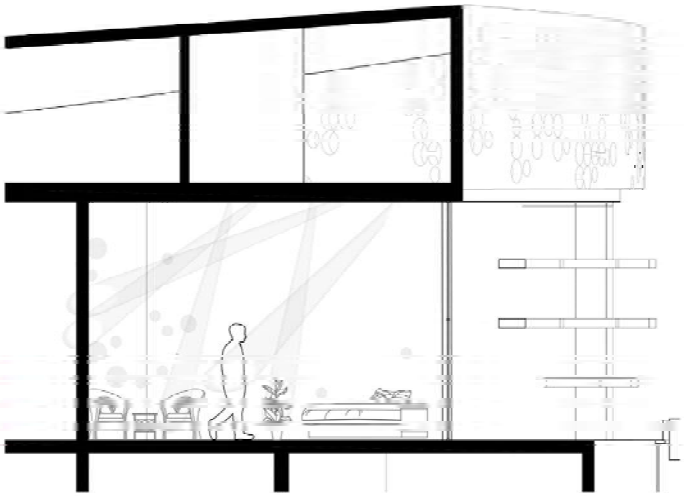
Mullions for shading

Floor slabs

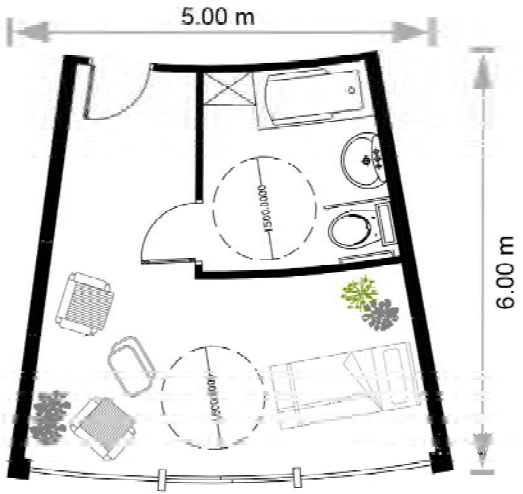
Glazing

Columns

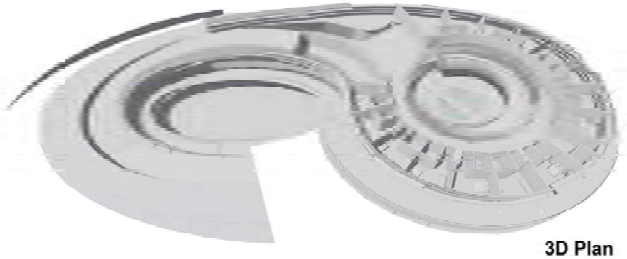
Structure exploded diagram



Stroke survivors' space section
Scale 1:50



Stroke survivors' space plan
Scale 1:50



3D Plan

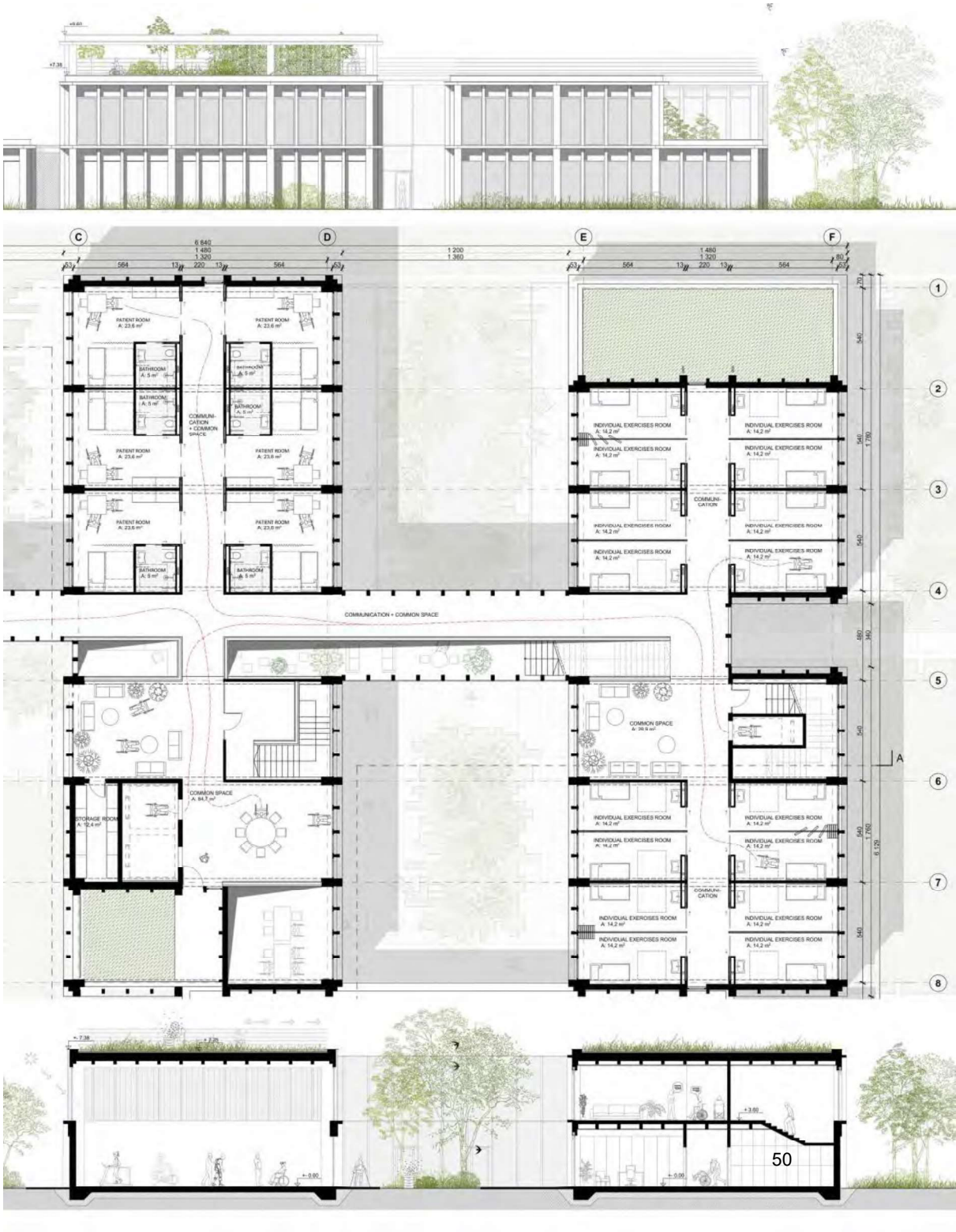
Deciding to choose a single room layout for the Stroke Survivors was to mainly achieve high levels of privacy, but to accommodate for the drawbacks such as decreased level of physical activity, a therapeutic garden was designed to encourage the Stroke Survivors to engage in psychical movement. The garden consists of different levels and elements (bridges, walkways, and recessed activity spaces) to stimulate the survivor's psychical and psychological healing.

Honorable Mention

Name of the Project: Rehabitat
Location: Gdansk, Poland

University: Silesian University of Technology
Country: Poland
Team Members:
Artur Gała
Jan Kubec (advisor)

ID #: 640128c267400
Submission folder #: 54




FRONT VIEW


GYMNASIUM COURTYARD VIEW

REHABITAT

Rehabilitation centre REHABITAT takes its name from a combination of the words rehabilitation and habitat. These describe the project as a place for rehabilitation characterised by optimal conditions for its users.The main design directions shaping these optimal conditions are structuralism and biophilia.

Important for structuralism is the openness of the system and its incompleteness, which is more like a constantly changing city than a defined, finite architectural composition. It is this characteristic in terms of responding to the coming increase in the incidence of stroke as a result of an ageing population and population growth that allows the structure to adapt to current needs. Therefore, a designed rehabilitation centre is never finished. Thanks to its modularity and characteristic 'block-courtyard' layout, it can be extended in the future to meet current demand for such units. Structuralism also aims to create a balance between private and shared spaces. Designing spaces where patients can actively participate in the community has a major impact on the recovery process. Activity and social support is important in protecting against the onset of post-stroke depression, which is a factor that reduces motivation for further rehabilitation [1].

The aim is a balance between these spaces and the possibility for users to control these zones. According to this concept, it is the user who decides when he or she wants to interact with others. Social isolation, i.e. a lack of access to social contacts, can be a consequence of difficulties in cognitive and emotional functioning that affect interpersonal relationships, communication difficulties and the challenges of future life in society [2]. In line with these ideas, the designed building has many spaces for social interaction. By covering the night area and sliding the entrance door open, the Stroke Survivor's Space can be opened up to other patients by its user. This allows contact to be initiated between them. Some of the corridors, in order to avoid limiting its function to movement only, have been extended to include spaces for meetings, conversations or individual relaxation. The extended space has been complemented with vegetation, furniture and increased height making it similar to an urban street.

Biophilia plays an important role in the project. Our tendency to come into contact with nature has a significant impact on physical and mental health. In the healthcare field, contact with nature can reduce stress, lower blood pressure, bring relief from pain, speed up recovery and improve staff performance. Extensive research in various settings has demonstrated the positive effects of biophilic design on human health and function. [3] This is particularly important in terms of healthcare facilities. The designed rehabilitation centre provides views of courtyards full of greenery from every room. In addition, the construction materials as well as the interior finishes are natural materials.

In order to create a site with the most optimal parameters, the project plot is located in the Polish city of Gdansk. The plot is close to a neurological clinic, a landscape park, the sea, a lake and a stud farm with hippotherapy activities.

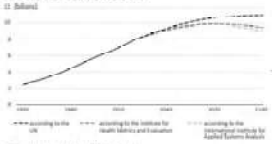
[1] Lewin A, Jöbges M, Werheid K. The influence of self-efficacy, pre-stroke depression and perceived social support on self-reported depressive symptoms during stroke rehabilitation. Neuropsychological Rehabilitation. 2013

[2] Mukherjee D, Levin R, Heller W. The Cognitive, Emotional, and Social Sequelae of Stroke. Psychological and Ethical Concerns in Post-Stroke Adaptation. 2014

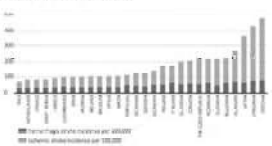
[3] Totaforti S, Applying the benefits of biophilic theory to hospital design, Totaforti City Territ Archit, 2018

DESIGN ISSUES

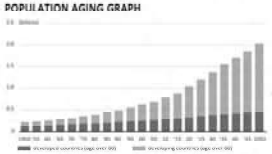
WORLD POPULATION GRAPH



STROKE INCIDENCE GRAPH

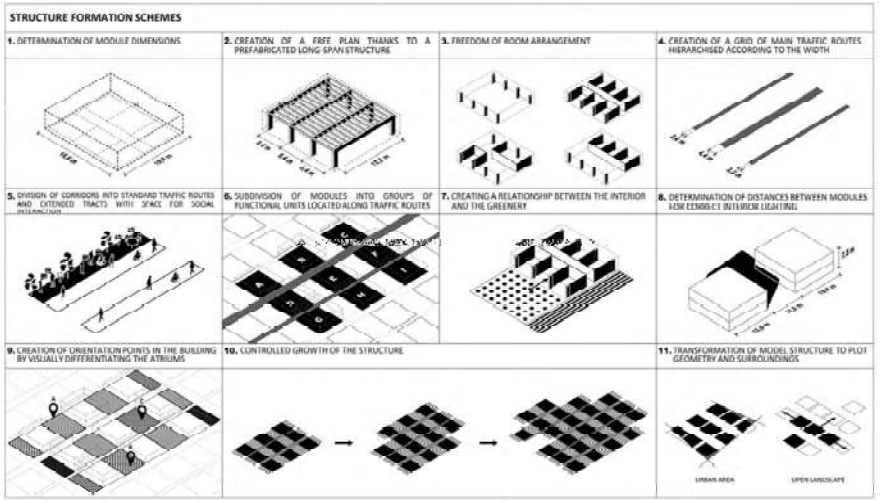


POPULATION AGING GRAPH

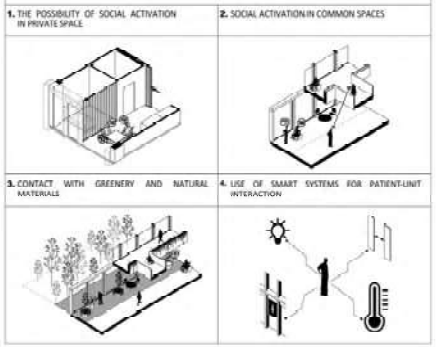


The combination of an ever-increasing ageing population and lifestyle related health status in developing countries is moving towards an increasing incidence of stroke among the population, requiring health facilities to be adapted to these changes. These facilities must be adaptable and amenable to continued growth and development.

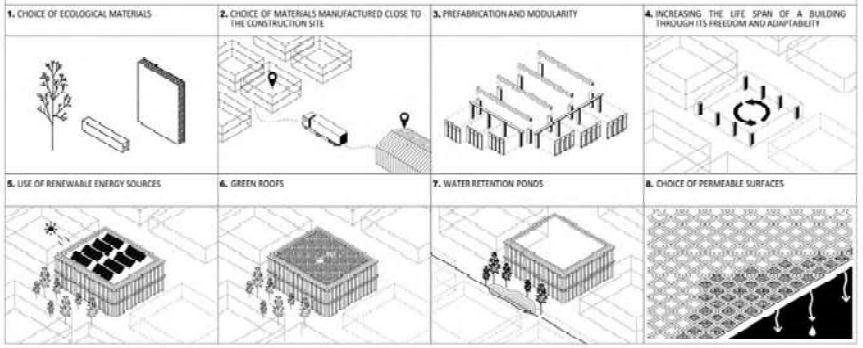
STRUCTURE FORMATION SCHEMES



IMPACT OF THE UNIT ON THE USER

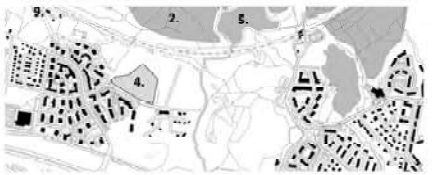


IMPACT OF THE UNIT ON THE ENVIRONMENT (ECOLOGICAL ELEMENTS)

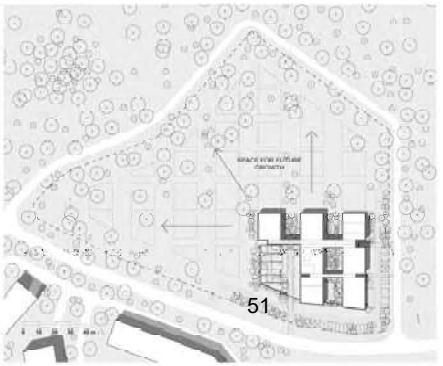


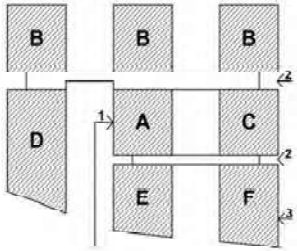
ANALYSIS OF THE SITE'S SURROUNDINGS

SITE'S CLOSE SURROUNDINGS



SITE PLAN





A - ENTRANCE ZONE, VERTICAL COMMUNICATION, COMMON SPACE, DINNING ROOM

B - PATIENT ROOMS

C - STAFF ROOMS, VERTICAL COMMUNICATION

D - SENSORY GARDENS

E - GYMNASIUM

F - TECHNICAL ROOMS, KITCHEN FACILITIES

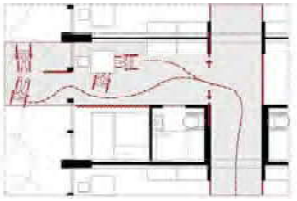
1 - MAIN ENTRANCE

2 - DISCREET ENTRANCE

3 - TECHNICAL ENTRANCE

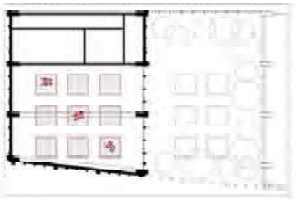
ADAPTABILITY OF PATIENTS' ROOMS

The patient staying in his room can decide on the form of this space themselves. The basic closed form of the room can be opened up and combined with a communal space and become a place for social integration.

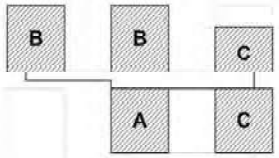


ADAPTABILITY OF GYMNASIUM

Patients exercising in the gymnasium overlook a garden full of a variety of plants. During suitable weather conditions, patients can exercise directly in this green space.



GROUND FLOOR PLAN 1:100 AREA: 1591.8 SQM



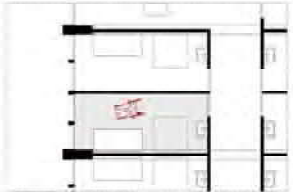
A - VERTICAL COMMUNICATION. COMMON SPACE

B - PATIENT ROOMS

C - VERTICAL COMMUNICATION, COMMON SPACE, INDIVIDUAL EXERCISE ROOMS

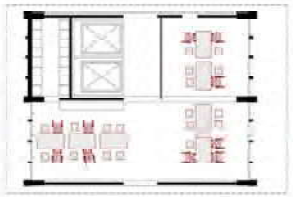
ADAPTABILITY OF INDIVIDUAL EXERCISE ROOMS

An individual exercise unit with basic dimensions, by using sliding walls, can be enlarged and adapted for exercises that require more space. This could be particularly important with the development of robotics in the field of rehabilitation. At the moment, we do not know the space requirements of the new development, but it will be able to adapt to them.



ADAPTABILITY OF DINNING ROOM

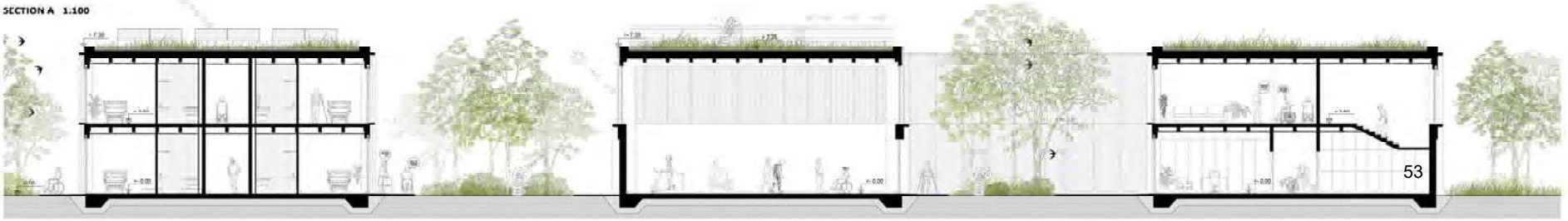
Thanks to the use of long-span structures, the interior design can be freely shaped and changed. The dining area, which is only used for part of the day for these purposes, can also become a place for meetings or communal activities.



EAST ELEVATION 1:100

FIRST FLOOR PLAN 1:100 AREA: 831,9 SQM

SECTION A 1:100



NOVELL ASPECTS OF DESIGN

1. Empowerment

Patients at the rehabilitation centre have control of the room. In the aspect of technological amenities, they can control elements of the room with gestures and voice commands. In the aspect of control of the social experience, the user of the space can transform a private place into a place for social interaction (see adaptability scheme on board no.2) Movement and orientation are facilitated by views of the differentiated patios as signposts.

2. Communication

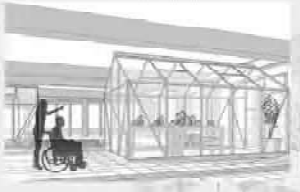
Patients can interact with other patients in their rooms or in public areas, e.g. in specially designed corridors extended with space for meetings and relaxation. They can also spend time with family and friends in their private space. Private and communal spaces have direct access to the courtyards, where one can experience a connection with nature, bringing conversation or personal relaxation to a peaceful tone.

3. Level of risks

Patients have the opportunity to engage in different types of activities depending on their stage of rehabilitation. Activities with other patients such as exercising, working with plants in the greenhouse, stimulating the senses in the sensory gardens, meeting in communal areas allow them to spend time out of bed and remain active.

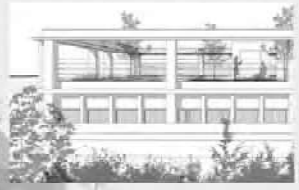
Greenhouses

A greenhouse with plants to enable simple gardening activities to aid recovery.



Green roof garden

The green space taken away by the buildings has been relocated to roof level, where some of it has been landscaped into gardens with terraces and vegetation and views of the surrounding.



Green courtyards

Green courtyards accessible from private and communal spaces, analogous to parks accessible from streets, can serve as a place to relax, meet, talk, exercise and commune with nature.

Sensory gardens

A garden in which the patient can experience the many scents of flowers, herbs and vegetables, a variety of textures and sounds. It has a relaxing and stimulating effect on the senses.

Social interactions in patient's room

With sliding doors and curtains covering the sleeping area, the patient's room can be transformed from a private space into a space for interaction with other patients.

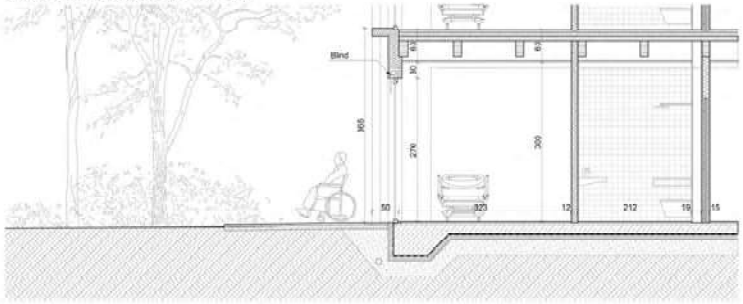
Exercises in nature surrounding

The direct location of the gymnasium next to the garden allows rehabilitation activities to take place in the natural surroundings of lush vegetation with a positive effect on patients.

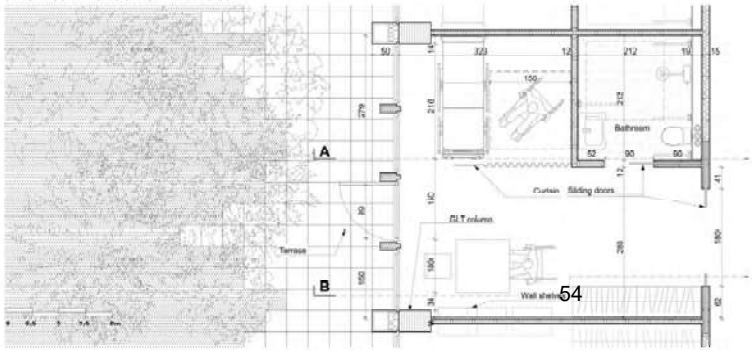
Common spaces for social interactions

Some of the passageways have been widened so that they go from being just a space for moving around to a space for meetings, social interaction and communing with nature.

STROKE SURVIVOR'S SPACE SECTION 1:50



STROKE SURVIVOR'S SPACE PLAN 1:50

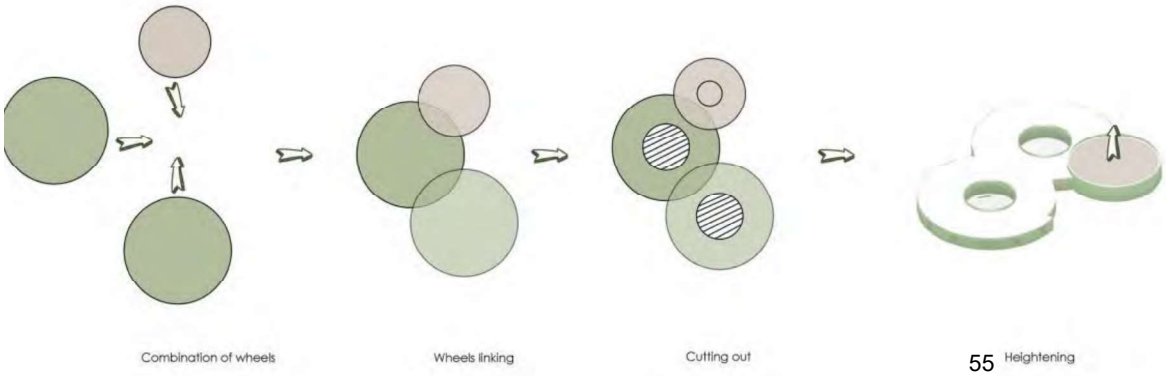


Honorable Mention

Name of the Project: Wroclaw Stroke Rehab Center
Location: Wroclaw, Poland

University: Wroclaw University of Science and Technology
Country: Poland
Team Members:
Ewelina Zub (Leader)
Fryderyk Karzkowiak

ID #: 63cfbb22b9e9b
Submission folder #: 99



WROCLAW STROKE REHABILITATION CENTER

REPORT

Location:

The Stroke Rehabilitation Center project was located in Wrocław, on Kasprowicza Street. The project plot is located near the Odra River, amidst green recreational areas. The neighborhood offers many walking trails along the river, away from the hustle and bustle of the city. In addition, there is a hospital in close proximity.

The idea:

The facility, together with the adjacent grounds, has been designed to provide patients with a healing space for the body and for the mind. A rehabilitation area, therapy area, medical facilities, entertainment and relaxation areas and outdoor recreational and stimulating spaces have been designed.

Terrain:

The site has remained largely green and sown in a meadow. Two autonomous roofed gazebos and a fruit orchard are provided on the plot. The plot area is surrounded by a walking path. Each patient has direct access to the mowed land from their room.

Architecture:

The body of the building is the result of the intersection of three circles. The two larger circles contain the rooms and rehabilitation areas, while the smaller circle connects the common areas for patients. In each of the large circles, its heart is the inner gardens. The building is single-story, which makes it retain a human scale. A large amount of glazing allows nature to seep into the interiors. A characteristic element of the design is wooden slatting, which insulate the facade and also provide shade for the room terraces. The building's common area, contained in the smallest circle, has been highlighted by raising its height. Skylights have been designed into the building to illuminate internal spaces such as the chapel and nursing rooms. The entire building has been designed to accommodate people with mobility disabilities.

Functional program:

The facility consists of 15 double rooms, a therapeutic area, a recreational area and technical facilities. The building includes a dining room, where patients can eat meals together. There is a common living room where patients can spend time, or meet with their families. The central part of the smallest circle contains a chapel, which was designed as a universal place, not subordinated to any particular religion. The entrance area includes a reception area and lounge area. The facility also includes medical and nursing offices. A storage area with a separate medicine stock room and technical and utility rooms have also been designed.

Stroke Survivor's Space description:

Each room has its own bathroom, a separate kitchenette and a private terrace. Each patient has the option of separating his or her bed with mechanically controlled curtains. This solution provides privacy, but also leaves the possibility of contact with another person. The bathroom has been adapted to the needs of people with mobility difficulties. Helpful handles have been placed, as well as a folding chair in the shower. Each patient has access to built-in furniture, which consists of a sliding-open cabinet, shelves for books and personal belongings, and a built-in seat. The upper bedside shelves can be used as storage for hard items.

Location

Situation

Chosen analysis:

Analysis od function

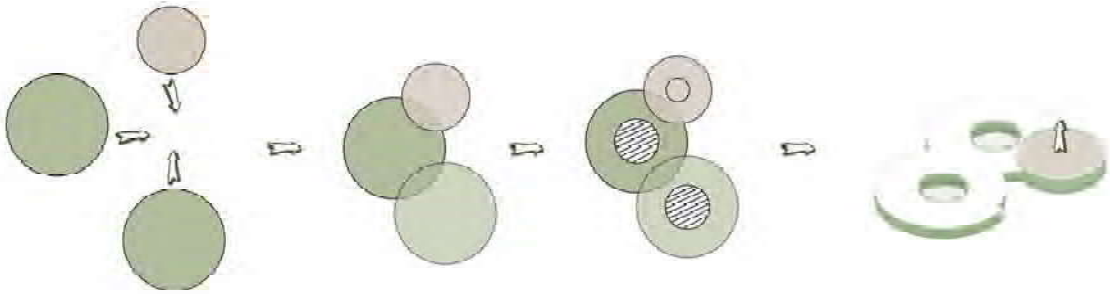
Designed plot
Single-family housing
Multi-family housing
Religious function
Commercial function
Allotments
Garage,outbuildings
Sport & leisure function

Analysis of communication

Designed plot
Roads
Pedestrian & bicycle traffic, paved pathways
Pedestrian & bicycle traffic, unpaved pathways
Public transportation stop
paved road with limited access for cars

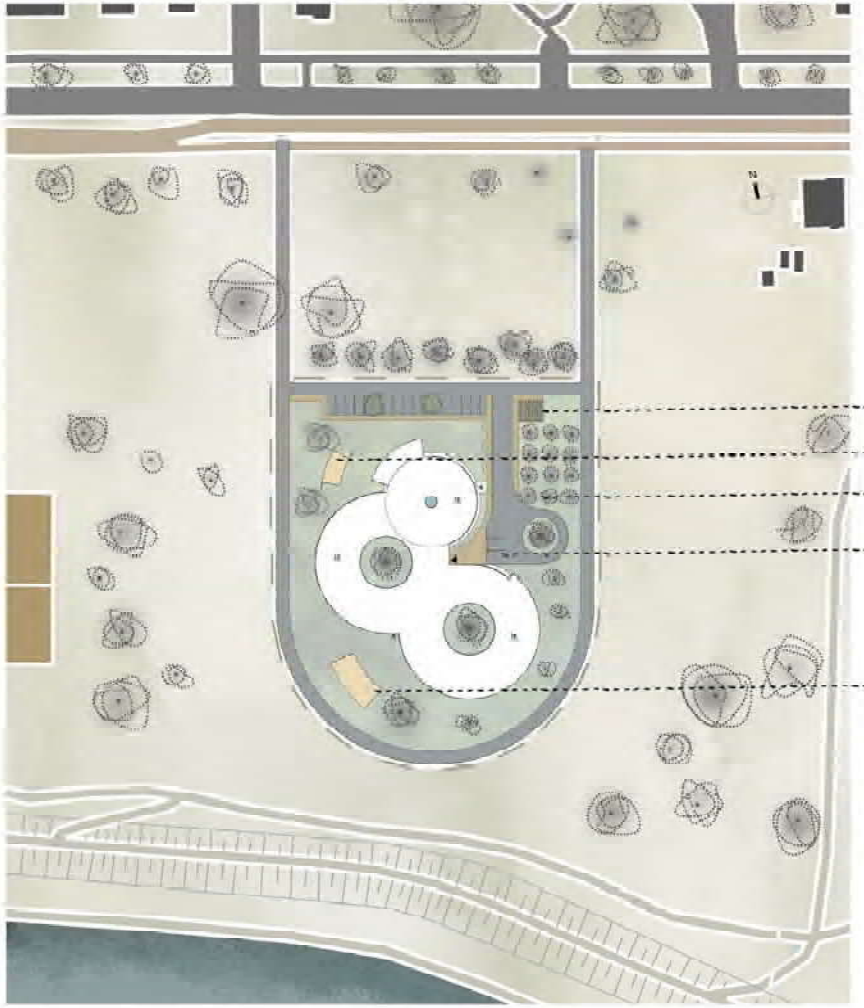
Analysis of greenery

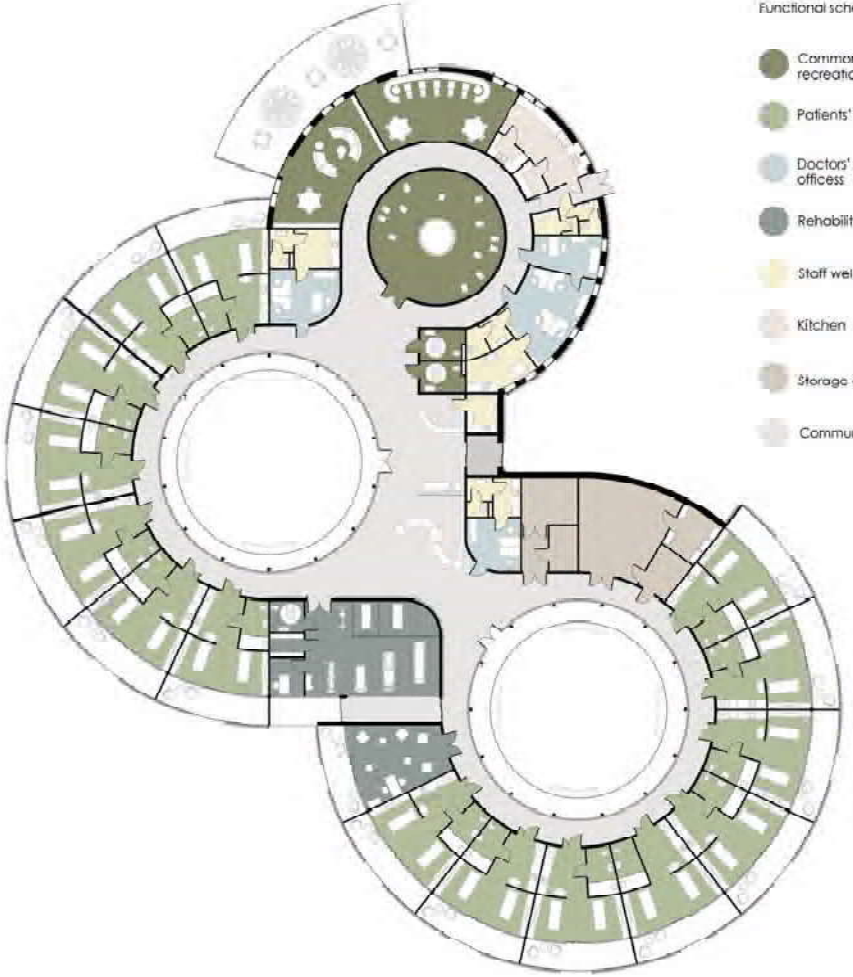
Designed plot
Allotments
Short greenery
Parks
Existing trees



Combination of wheels
Wheels linking
Cutting out
Heightening

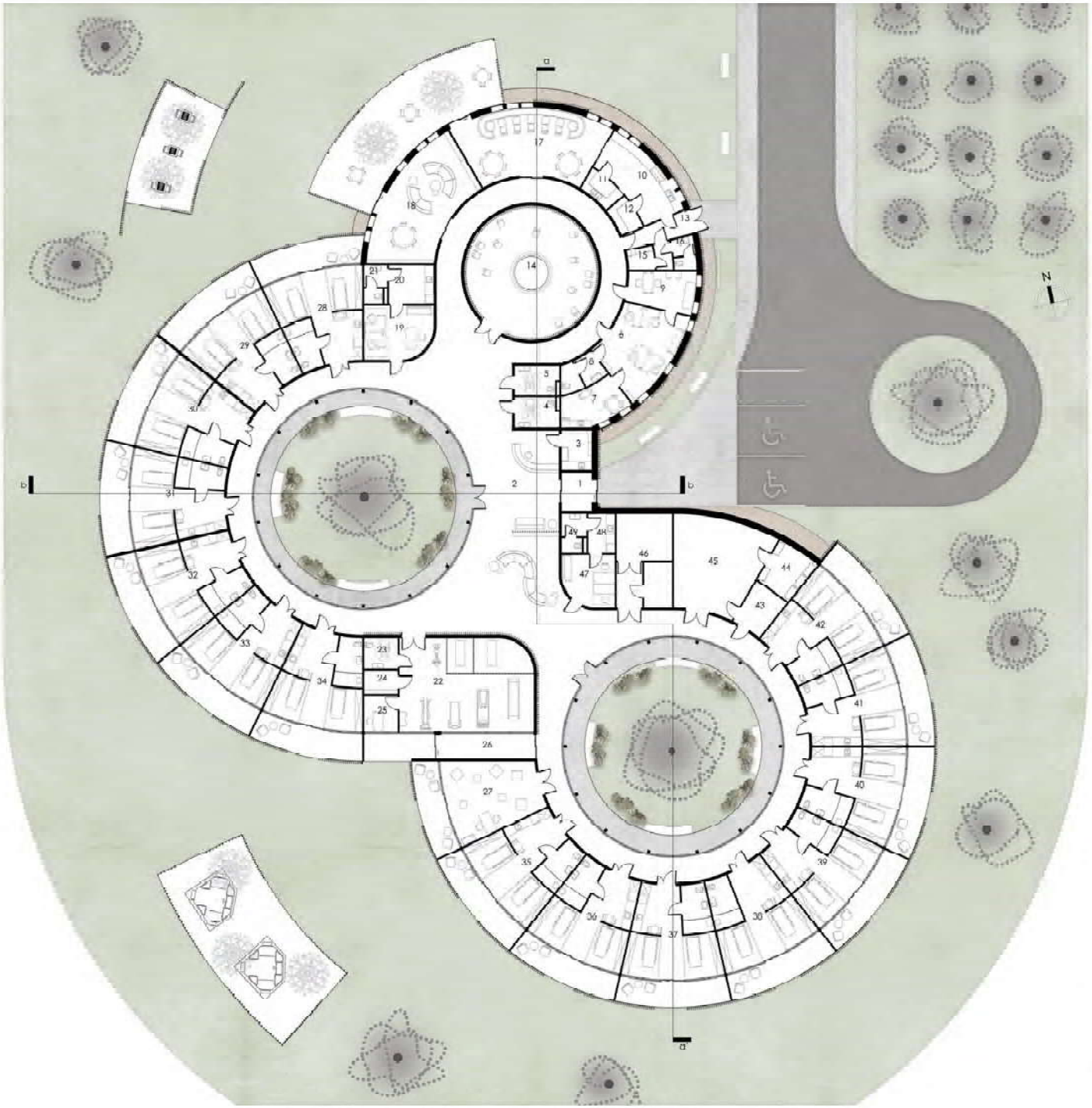
WROCLAW STROKE REHABILITATION CENTER





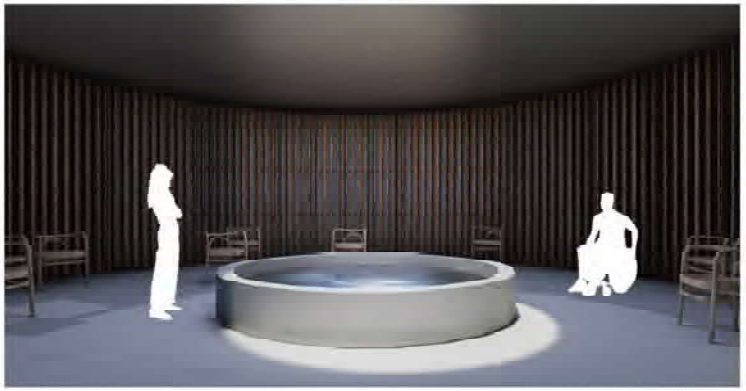
WROCLAW STROKE REHABILITATION CENTRE

Floor plan 1:150



Gazebos view

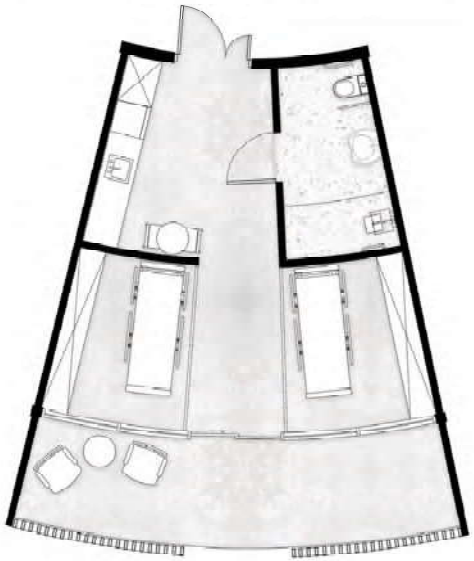
1	entrace	6 m2	13	delivery	7 m2	25	doctor's office	7 m2	37	room	40 m2
2	gallery	422 m2	14	chapel	75 m2	26	WC	13 m2	38	room	40 m2
3	staff facilities	7 m2	15	staff facilities	5 m2	27	therapy	34 m2	39	room	40 m2
4	toilet	7 m2	16	staff toilet	4 m2	28	room	40 m2	40	room	40 m2
5	toilet	7 m2	17	dining room	48 m2	29	room	40 m2	41	room	40 m2
6	office	09 m2	18	living room	45 m2	30	room	40 m2	42	room	40 m2
7	social room	12 m2	19	nursing facilities	19 m2	31	room	40 m2	43	utility	10 m2
8	staff toilet	6 m2	20	social room	9 m2	32	room	40 m2	44	drug warehouse	8 m2
9	doctor's office	13 m2	21	staff toilet	4 m2	33	room	40 m2	45	storage	43 m2
10	kitchen	21 m2	22	physiotherapy	66 m2	34	room	40 m2	46	technical	27 m2
11	sink	4 m2	23	toilet	9 m2	35	room	40 m2	47	nursing facilities	14 m2
12	storage	4 m2	24	storage	4 m2	36	room	40 m2	48	social room	5 m2
									49	staff toilet	5 m2
									total		1594 m2



Chapel view

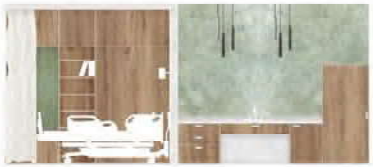
Axonometric view

WROCLAW STROKE REHABILITATION CENTER



Stroke Survivor's Space 1:50

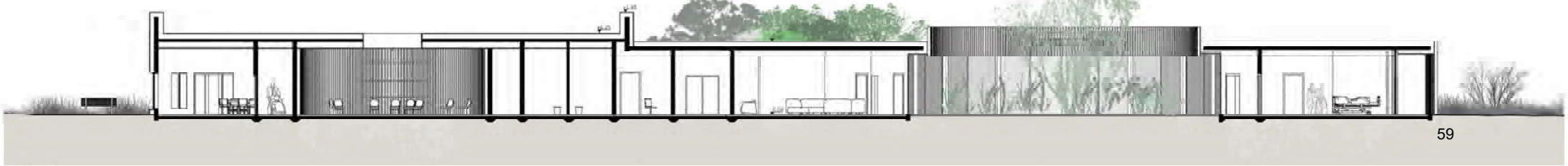
Rehab ward view



Walk layouts 1:50

Scheme of furniture installation 1:50

Section b-b'



Section a-a'

Honorable Mention

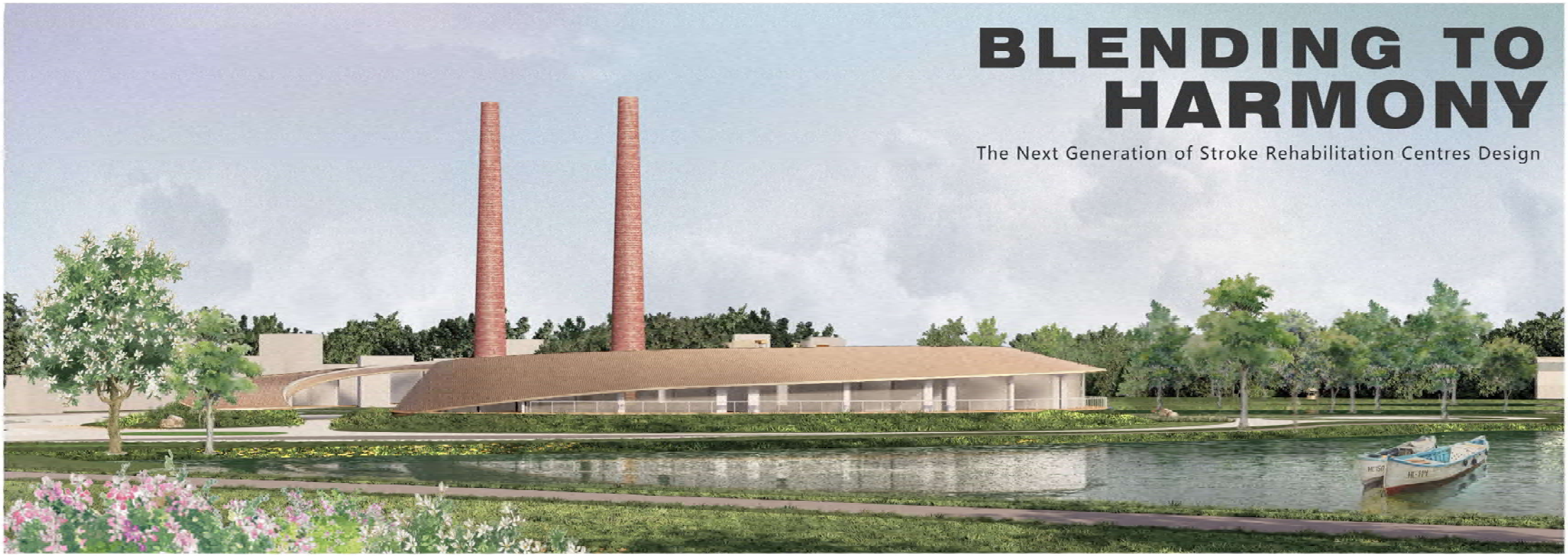
Name of the Project: Blending To Harmony
Location: Wuhan, China

University: Wuhan University
Country: China
Team Member:
Qiwei Liu
Lingjiang Huang (Advisor)
Xu Peng (Advisor)

ID #: 640070348626e
Submission folder #: 102

BLENDING TO HARMONY

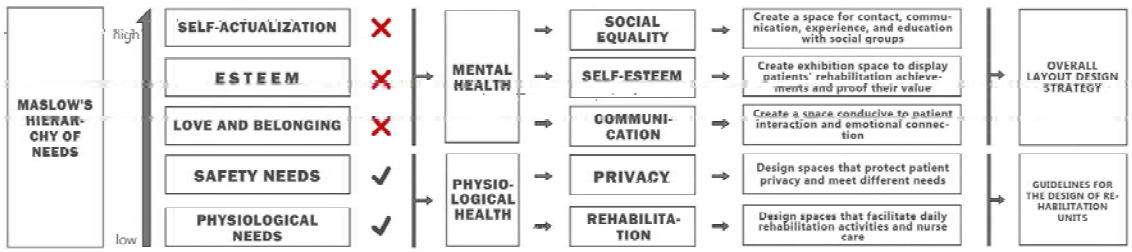
The Next Generation of Stroke Rehabilitation Centres Design



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.

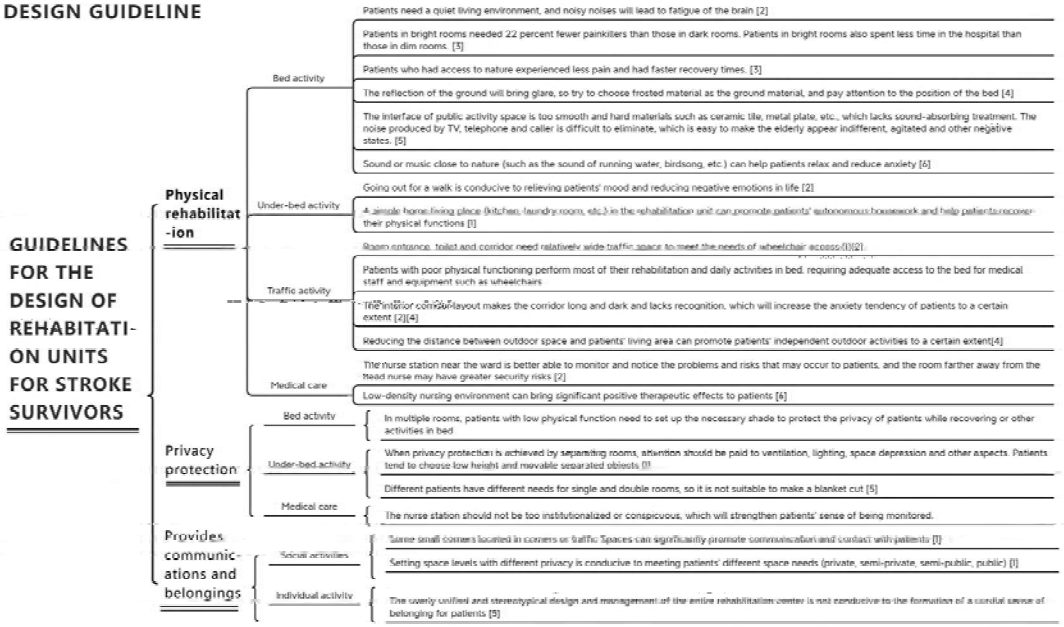
Therefore, as the next generation of rehabilitation centers, we should pay more attention to the psychological and higher level needs of stroke patients, while ensuring that the basic level needs are fully satisfied, through the design of space and function, to create a humanized, diversified, warm and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

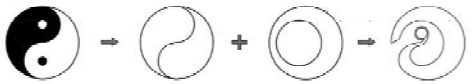
DESIGN GUIDELINE



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

INSPIRATION SOURCE

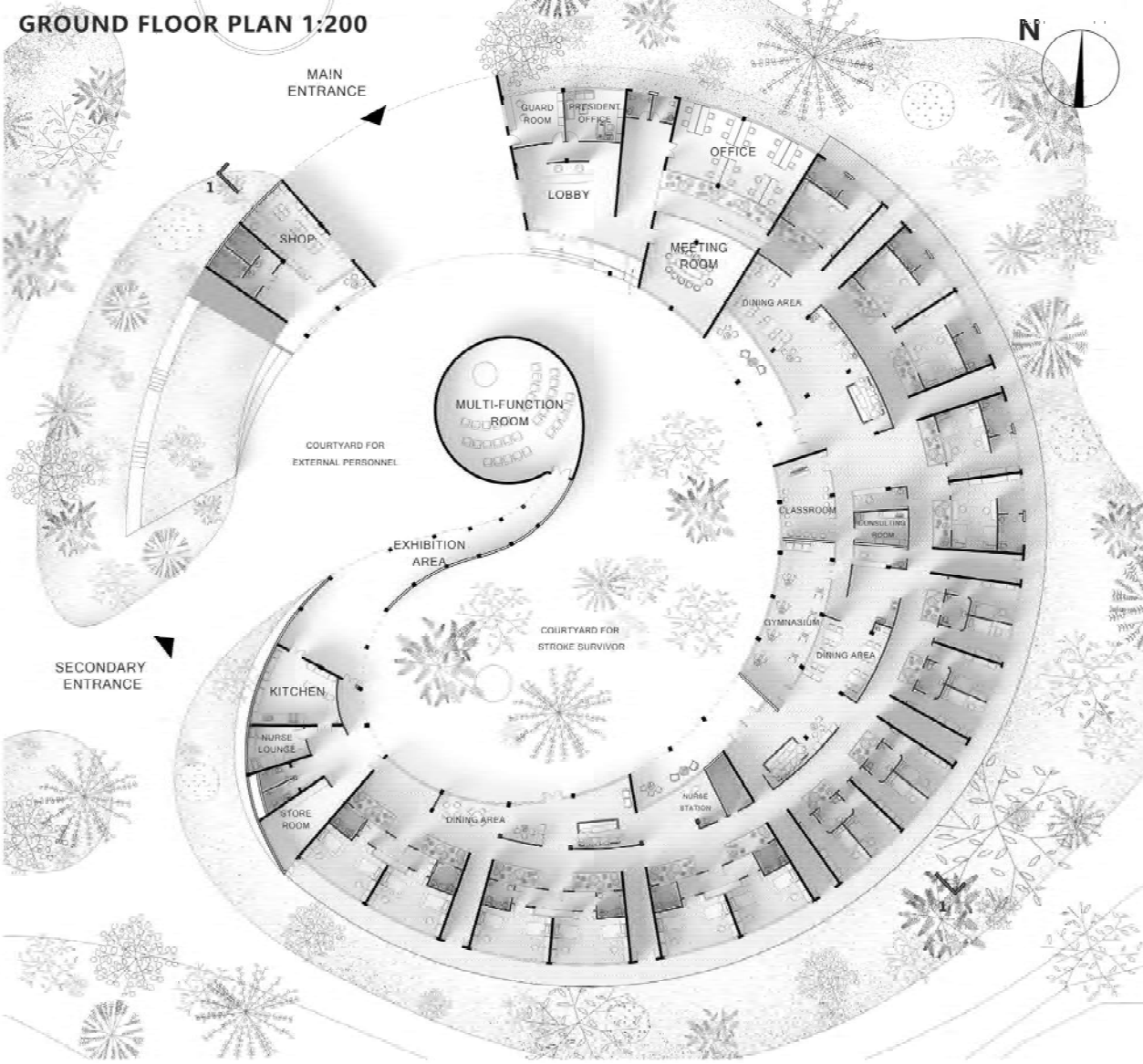


Tao Te Ching, the masterpiece of eastern philosophy, mentioned that,

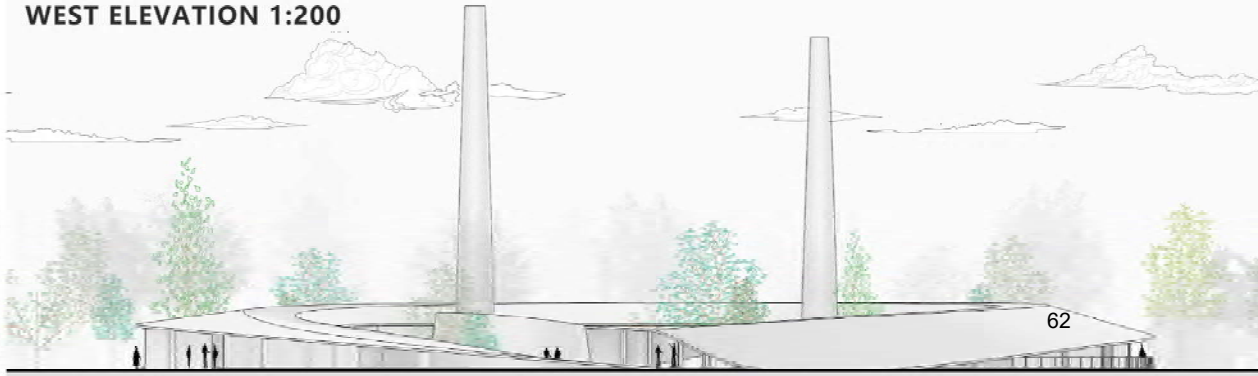
"All things bear the 'negatives (Yin)' and embrace the 'positives (Yang)' to become harmonious by blending two forces."

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.

GROUND FLOOR PLAN 1:200



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 [3][4]

The patio provides good lighting and sound insulation

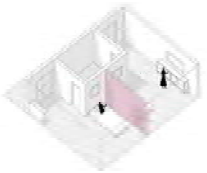
MONITORING WINDOW

- 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

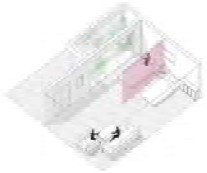
Caregivers can effectively monitor the status of four patients at once

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

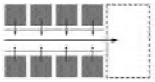


double room for mild cases
Meet the daily activities of mild patients. Hanging curtain can easily achieve privacy protection

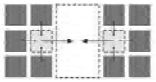
double room for intensive cases
The hanging curtain protects the privacy of the patient's bed activities.
Nursing Window provides an efficient way for caregivers to monitor patients at all times

INTERIOR LAYOUT

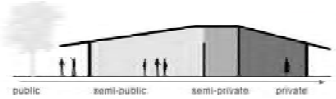
BEFORE



AFTER



Public Space | Rehabilitation Unit



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

Group Space

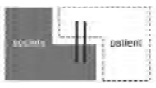
- Family living mode in groups
- Each patient has easy access to the activity space
- Multilevel public space
- Help patients communicate and build a sense of belonging

- 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

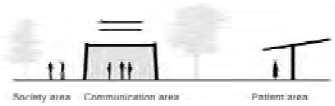
BEFORE

AFTER



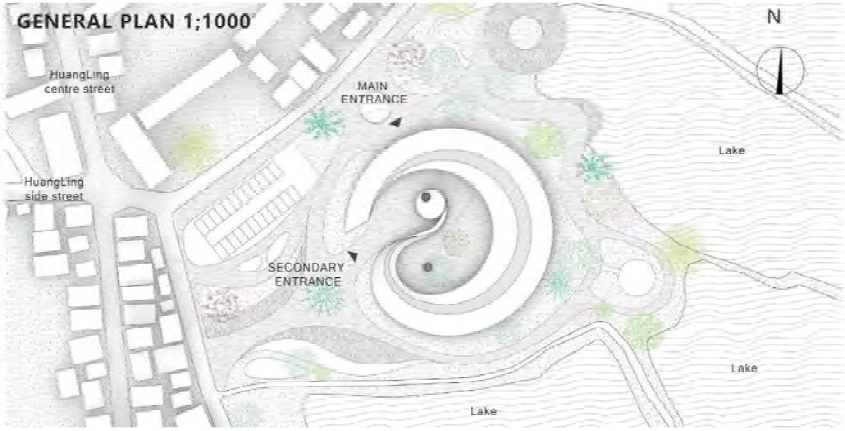
Isolated

Communication

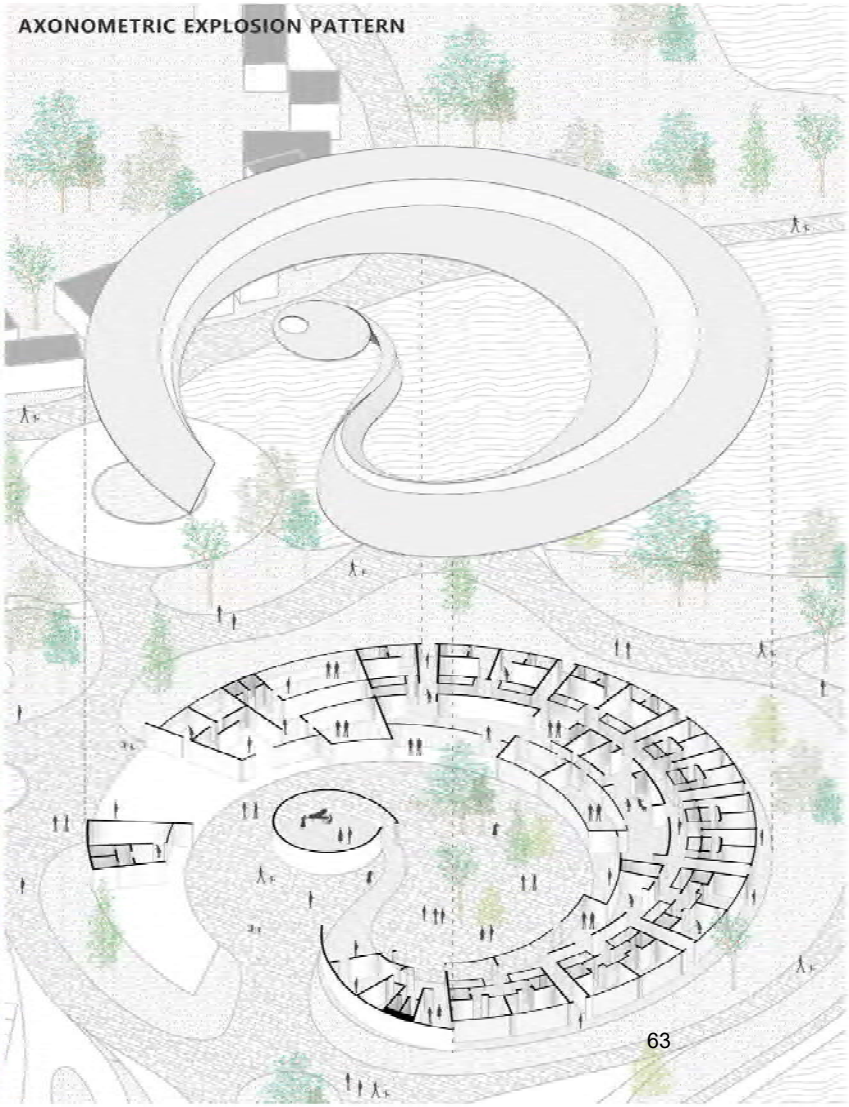


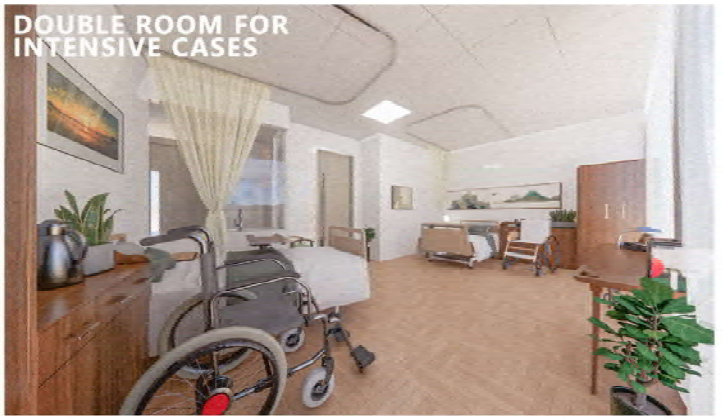
SECTION 1-1

GENERAL PLAN 1:1000

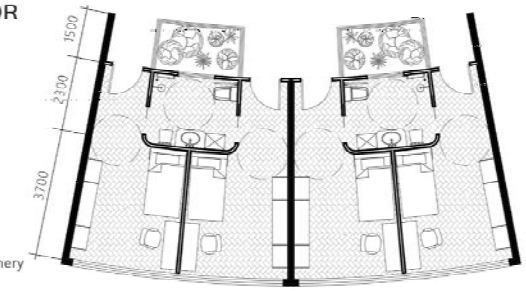


AXONOMETRIC EXPLOSION PATTERN



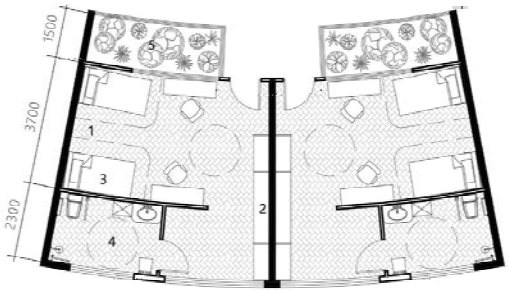


SINGLE ROOM FOR MILD CASES



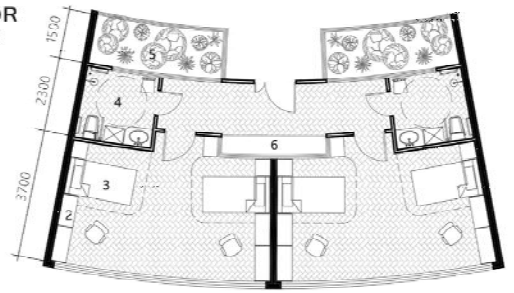
1 movable partition wall
2 closet and cabinet
3 2m * 1m Single bed
4 public toilet
5 light patio filled with greenery

DOUBLE ROOM FOR MILD CASES



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

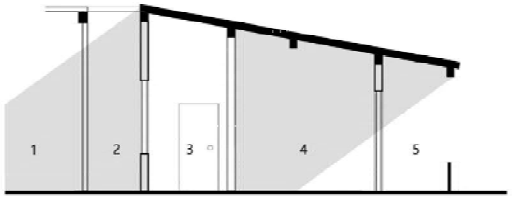
DOUBLE ROOM FOR INTENSIVE CASES



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

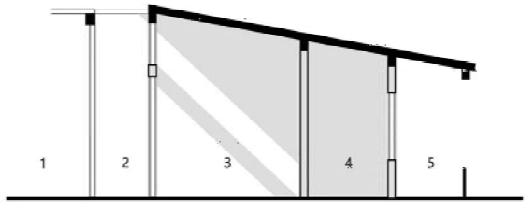
* The apartment is distributed on the southside and east side, using the floor-to-ceiling window of south side for lighting



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

DOUBLE ROOM FOR MILD CASES

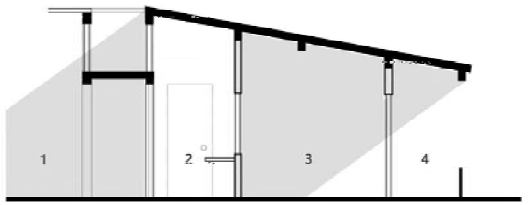
* The unit is distributed on the north side, useing the north side patio for lighting



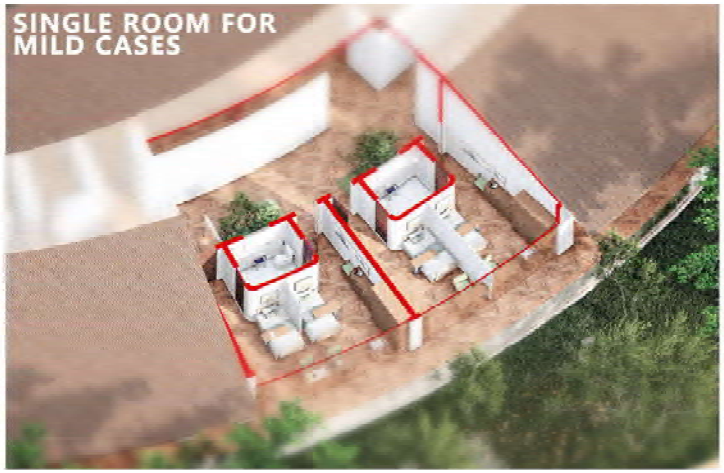
1 public space corridor
2 light patio filled with greenery
3 living space
4 public toilet
5 outdoor balcony

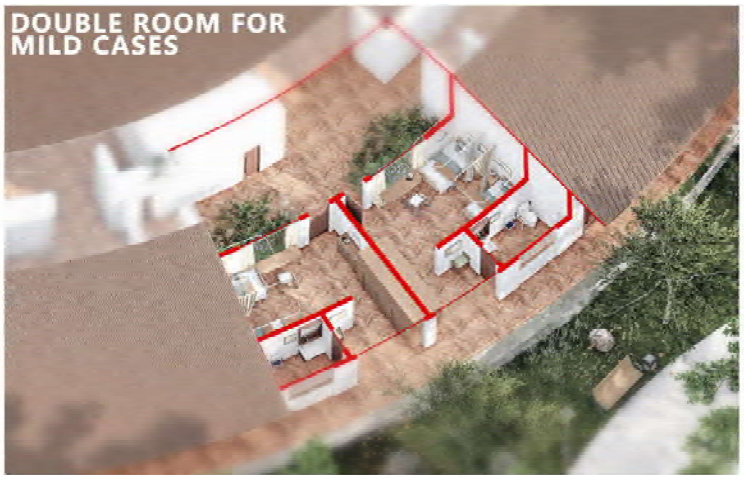
DOUBLE ROOM FOR INTENSIVE CASES

* 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



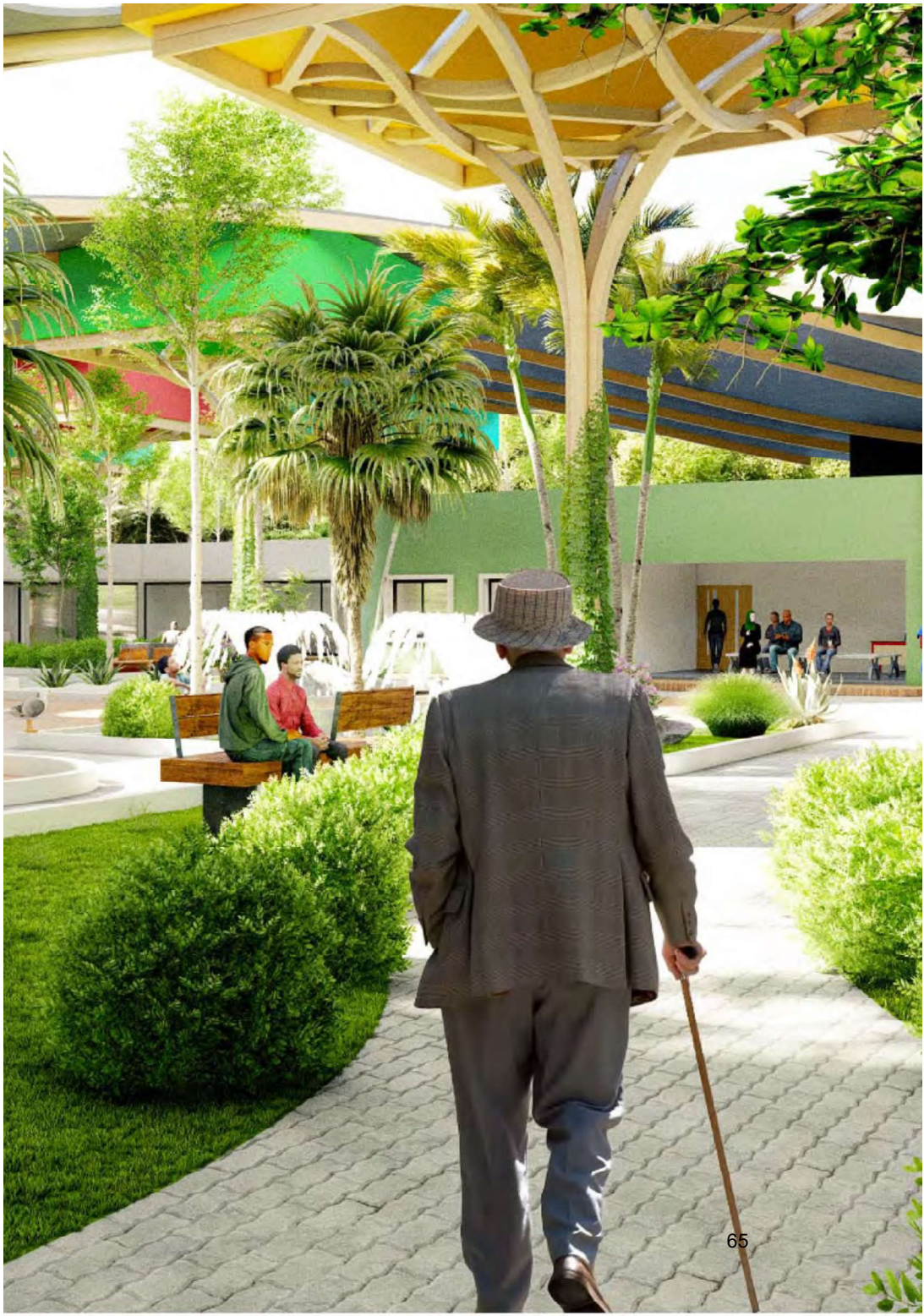


Honorable Mention

Name of the Project: Revive Through Nature
Location: Minkoameyos, Yaoundé, Cameroon

University: National Advanced School of Public Works
Country: Cameroon
Team Members:
Kenfack Azangmo Anselme Raoul (Leader)
Tekeu Kelly Fakira
Tsafack Fabien Junior
Tiayo Nopousse Diderot
Joubouh Atiofak Bienvenu Espoir

ID #: 63f0d801eff73
Submission folder #: 142



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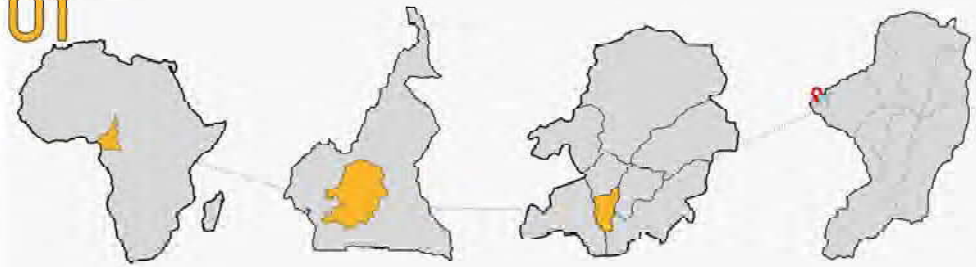
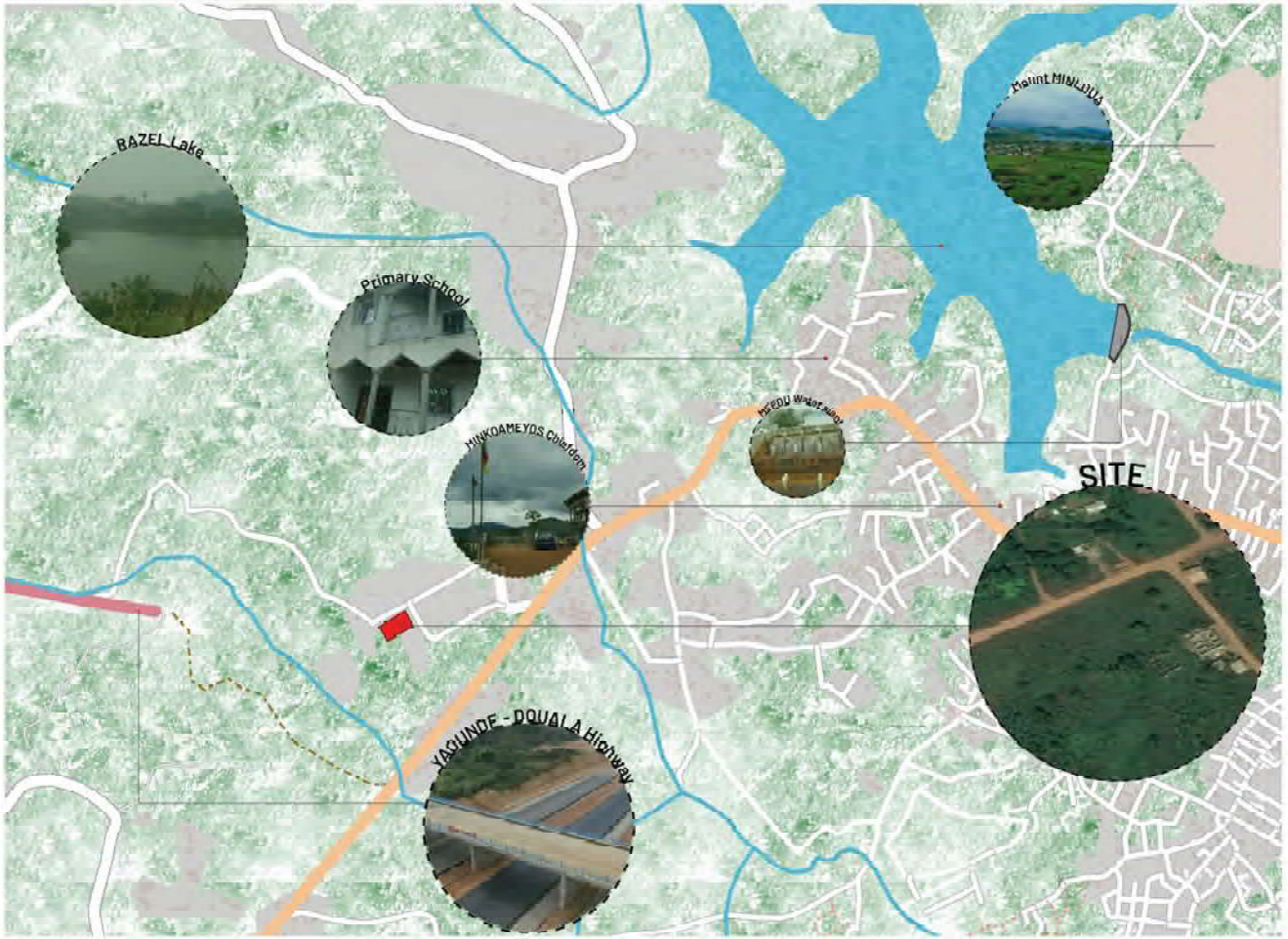
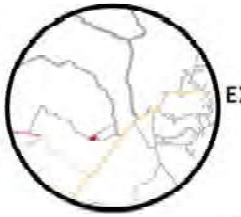
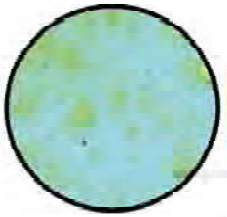


Minkoameyos is a village, at the outskirts of Yaounde, in the centre region, Mfoundi department and yaounde 7 Municipality

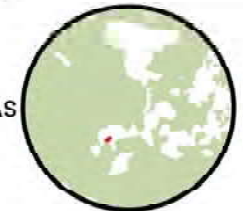




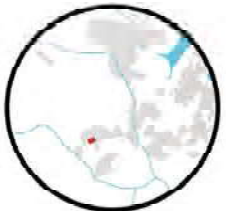
EXISTING ROADS



TOPOGRAPHY

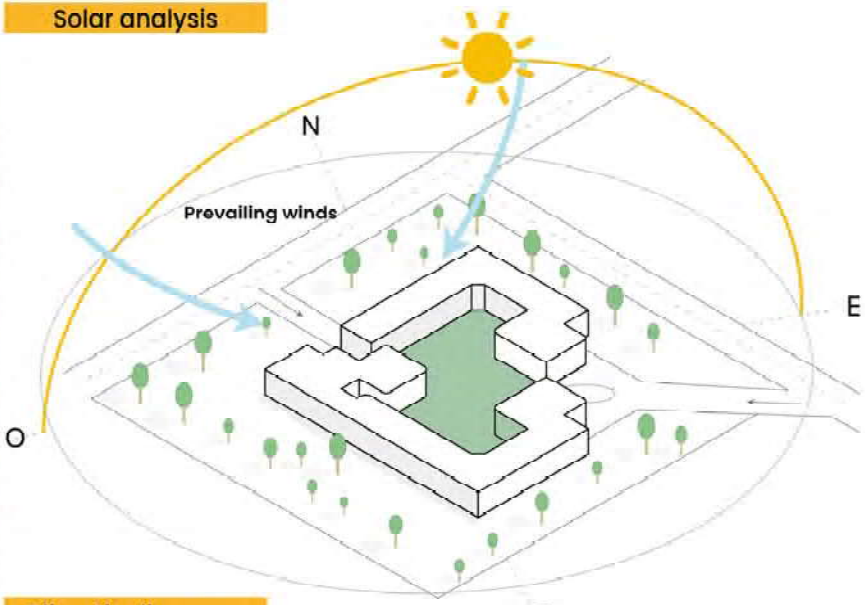


UNBUILT AREAS

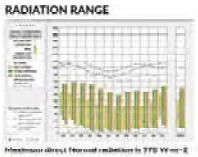


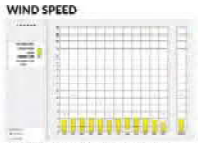
BUILT AREAS

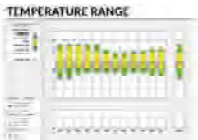
Solar analysis



Climatic diagrams







S
- Quiet, surrounded by nature and vegetation
- Located at outskirts, so away from the noise of the city

W
- Lack of planned space
- Poor state of existing roads

O
- Can be a landmark for the area
- Boost the development of the area

T
-Possibility of haphazard settlement around

1. BUILDING MATERIALS

Torchis

A mortar made of fatty earth and chopped straw, used to fill in the walls.

2. CULTURE

- Cultural diversity

3. RURAL LIFE

- Farming

4. CLIMATE

- Tropical Equatorial Climate
- Average temperatures 23°C
- Dry season, December to March

02

MASTER PLAN

REVIVE THROUGH NATURE

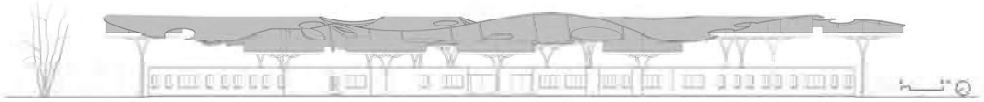
CONCEPT

Being aware of the positive and stimulating effect of nature on healing, the design seeks to establish an environment which itself already serves as therapy for the patients, using Evidence based design and Experience driven design strategies.

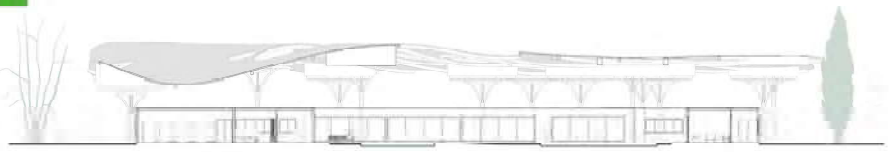
The project is divided in 03 main zones: stroke survivor space, stroke survivors' services and staff area, all 3 linked by an open space at the Centre where stroke survivors can meet, interact and carryout various activities. The wavelike covering, unifies theses three instances into one, supported by columns. This covering is slightly detached from the blocks to allow cross ventilation and creates ambient shadows through the perforations made.

The presence of a cultural space allows vernacular treatment techniques, as in Cameroon, brain injury is generally perceived as a mystical illness.

ELEVATION E



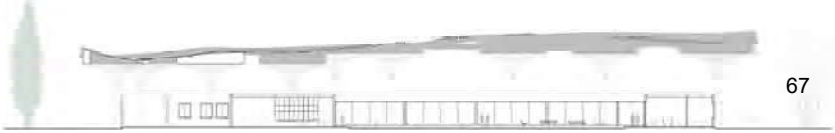
SECTION AA



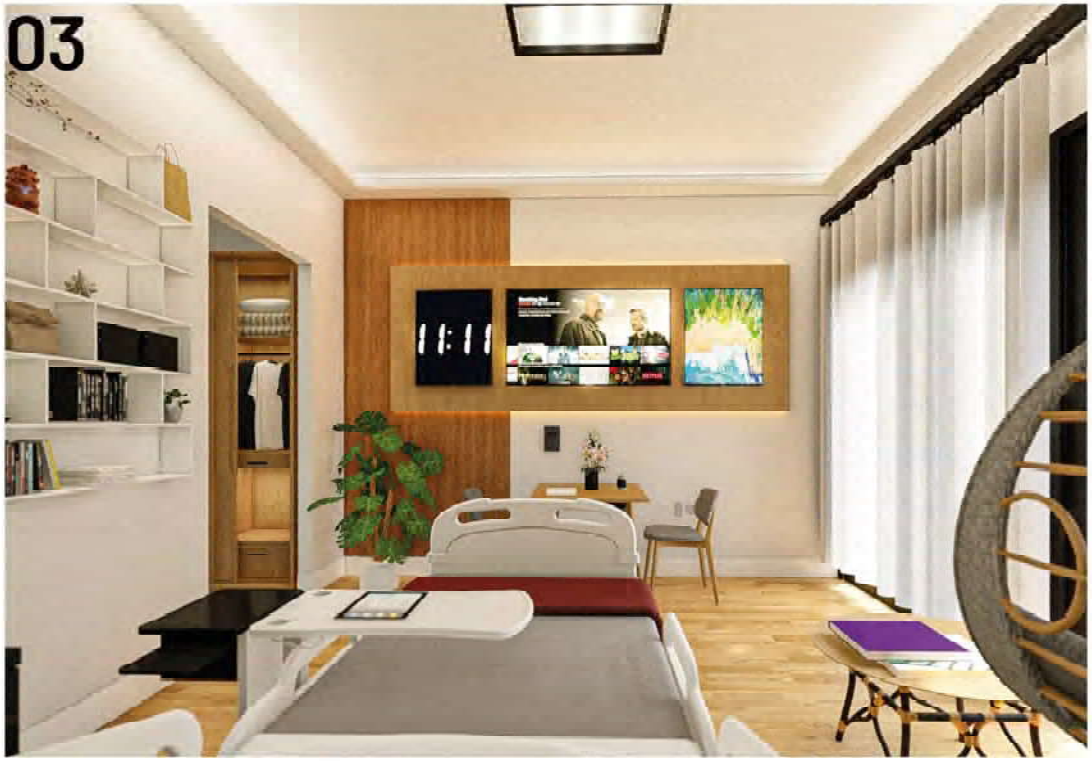
Simplicity and sustainability are the basis, underlying the building process. The roof sheet is made of recycled plastics, supported by the wooden treelike columns. The walls are made of adobe earth bricks with plaster as finish layers, and the use of glass on all elevations allows some transparency and continuous dialogue with the exterior environment.

The design is genuinely sustainable, exploiting its climate and context to minimize energy consumption and maximize the use of passive energy. Courtyards, gardens and fountains provide shade and allow evaporative cooling.

SECTION BB



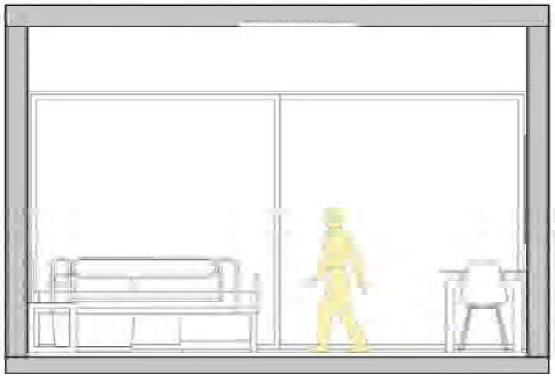
03

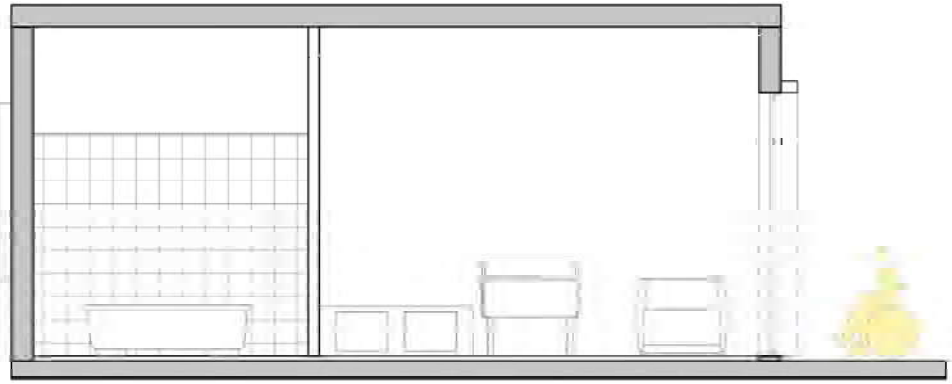


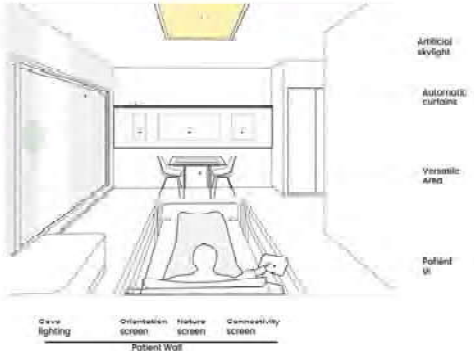
INDIVIDUAL STROKE SURVIVOR SPACE

The stroke survivor spaces have 03 typologies, which can be used by a wide range of patients, including bariatric patients and patients on wheelchairs at different levels of recovery.
The independent living unit permits patients at an advanced stage of recovery to receive their family members in private and carryout activities of daily living, to simulate life at home.
The use of modern technologies like light sensors and camera views, help keep patients in contact with the staff and provide information, directions and orientations to patients about different activities.
Elements like patient wall, skylight which are components of the Adaptive healing room allows the patients to feel some empowerment over the space in which they are.

SECTIONS







Above all, the stroke survivor space creates a learning environment to stimulate the senses. The presence of a versatile and adaptive area allows the patient to take risks and engage in various activities. A simple customizable area, using retractable furniture's, where different activities like self-directed therapy, painting, could be carried out.
The design empowers patients and encourages them to become active participants in their path to recovery. They can control their personal space, choose the type of environment they want to recover in and the level of social interaction they prefer. They have full access to landscape and meditation spaces - an essential part of the healing process.

6. STATEMENT & CONTACT INFORMATION

6.1 Statement

This document presents an overview of the student competition, describing the judging sessions, evaluation process, and results. All information provided herein is accurate. This document was initially developed by Zhipeng Lu, the coordinator of the jury sessions, and has been reviewed and approved by the competition jurors: John Cooper, Fani Vavili-Tsinika, Jane Carthey, Innocent Okpanum, Philip Sun, and Henning Lensch.

6.2 Contact Information

If there are any questions regarding this report, please contact:

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