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PREFACE

Saori Imoto Assitant Prof. , Department of Architecture, the University of Tokyo

Happy Promotion Center is a Non-formal school established in 2006 at Mukuru Kwa Reuben. Non-formal school is a private school which is not registered by Ministry of Education but acting a big role as an educational institution not only in Mukuru but also in all the slums in Nairobi. Our team, volunteers from Urban Redesign Studies Unit / Architetural Planning Laboratory, the University of Tokyo has participated in research about these schools since 2011 and constructed a strong relationship with Happy Promotion Center and other schools in Mukuru.

In 2015, we constructed new classrooms for Happy Promotion Center at a current site in Mukuru Kwa Njenga. After the construction, we faced some challenge. One of the challenge was about a security. Thieves broked into the school for several times as they found the school is supported by foreigners' group. To overcome these challenges, we discussed and decided to construct a care-taker's house to make it possible for school staff and their family to stay in this site.

As one year and a half passed since the school shifted to the current site, the relationship between neighborhood and environment of the area has became better. We can see pupils playing in a vacant land next to the school site, and that made the space cleaner as the pupils clean up daily. We believe the school has a power to change or to improve the area. We would like to continue the project to find how small school can contribute to make the community better.

For this project, we collaborated with Slum Architect Associates which made everything possible without any trouble. I would like to say thank you to Joshua Owino and other Slum Architect Associates members for a great contribution. I also would like to thank Dick Olango for supporting our project for a long time. Edwin Oyaro has been helping us to do research in Nairobi since 2011 and helped this project as well. Siqi Li is the one who designed the house and instructed other students to construct.

Finally, I appreciate all the support from Muendo(Director), Felista(Head Teacher) and Janet from Happy Promotion Center.



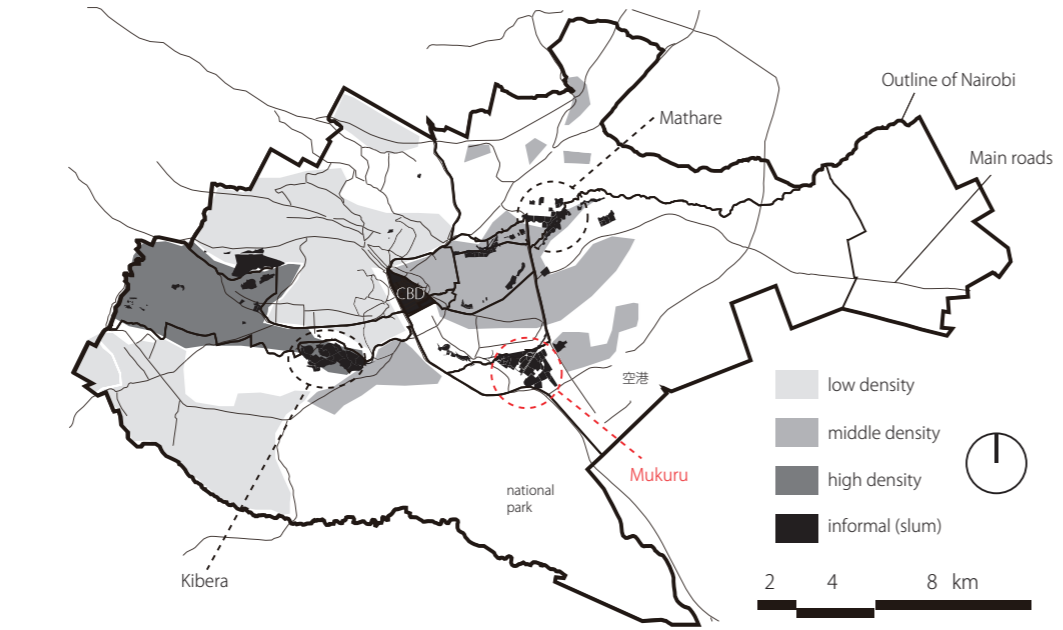
Site Location

Since independence from United Kingdom in 1963, rapid modernization and urbanization have proceeded and many slums were formed by a large number of migrant workers from rural areas ❶. A land occupied by slums is only five percent of Nairobi, but sixty percent of population resides in these slums as a safety net for low-income population (Mugisha 2006).

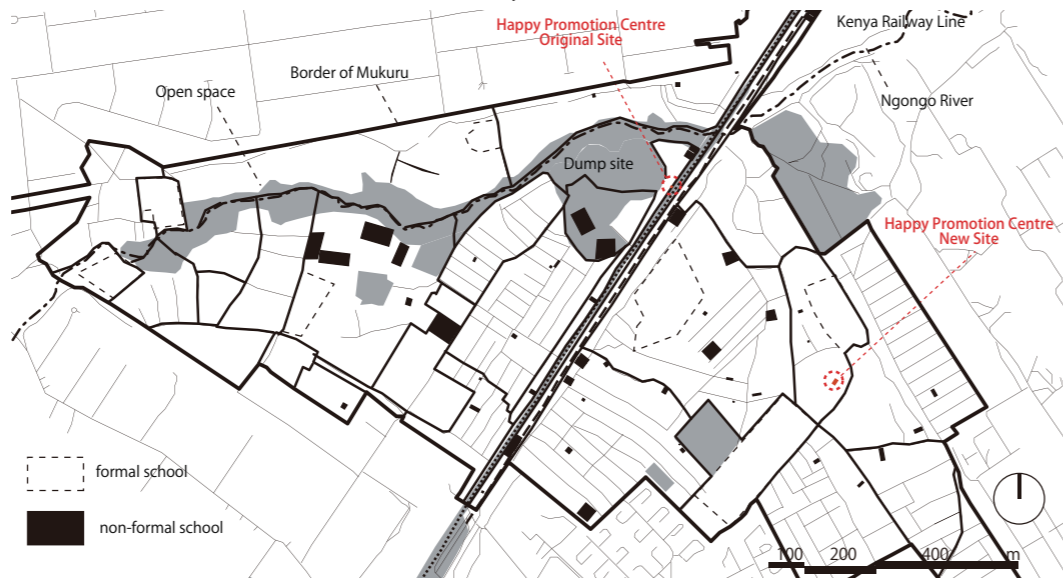
Mukuru exists across a border of Makadara Division and Embakasi Division. This slum is the third largest informal settlement, following Kibera (biggest in Africa) and Mathare, and it has a history of expansion by migrant workers working at industrial districts since 1970s.

Mukuru is consisted by three areas; Kwa Reuben, Kwa Njenga and Lunga Lunga. The oldest area is Kwa Reuben and Happy Promotion Centre locates in this area.

Happy Promotion Centre is a school which is not authorised by the Ministry of Education. This kind of school is called 'non-formal school' in Kenya. In Mukuru, there are six formal schools and seventy to eighty non-formal schools ❷. It is assumed that about 50% of the children in Mukuru belongs to non-formal schools.



❶ Map of Nairobi

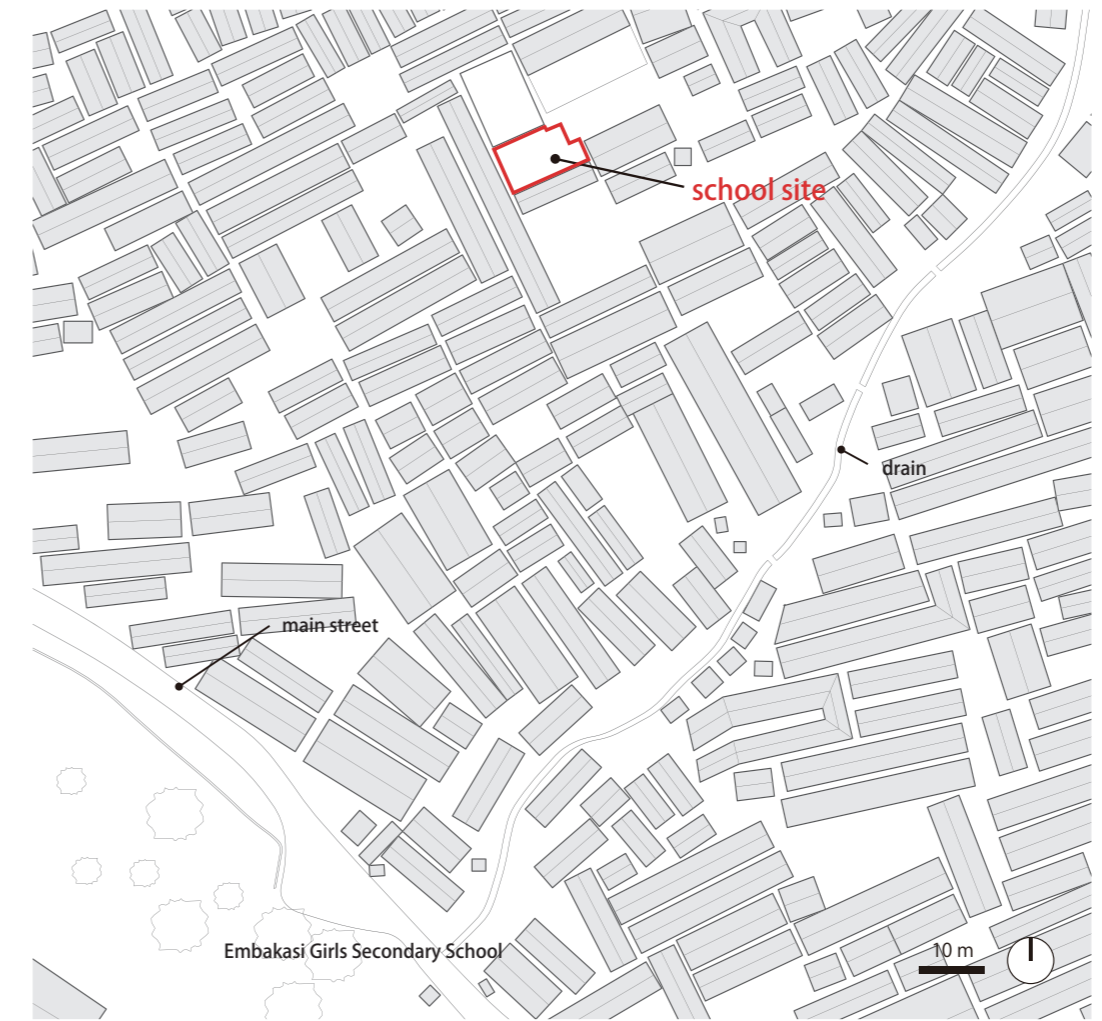


❷ Location of schools in Mukuru

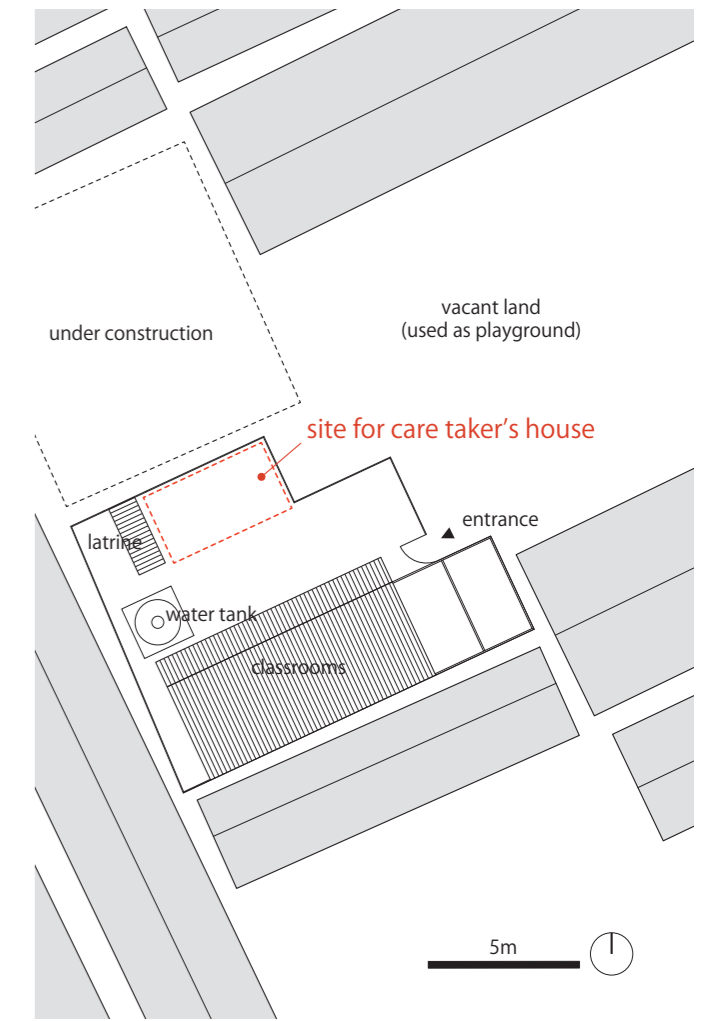
Site Plan

Happy Promotion Center Locates at interior site at Simaba Cool, Mukuru Kwa Njenga. The access from main road to the site is along the drainage and very narrow ❸.

Next to the site is a vacant land and children are allowed to use the land as a playground. The classrooms constructed in 2015 locates at the south part of the site. The site for the care taker's house is north east part of the site. ❹



❸ Site and Surrounding Area



❹ Site Plan

CONCEPT

Siqi Li Ph.D. Candidate, Department of Architecture, the University of Tokyo

1. Versatile Layout

The caretaker's house can be used as either a house or a classroom. Normally, it would be used by caretakers to live in and protect the school from thieves. It can also be converted into a classroom when needed due to the lack of classroom. With the door placing at one side of the house The layout refers to the typical layout of a classroom in this area.

2. Furniture Integrated in Structure

It takes a large amount of money to purchase the furniture for a new house generally. As a solution to this issue, the design integrates most of the furniture into the housing structure. With a table being made along with the construction of the house, no extra furniture is needed. On the first floor, a continuous surface serves as bench, bed, kitchen table at the same time, saving space for living activity and educational activity.

3. Climate Friendly

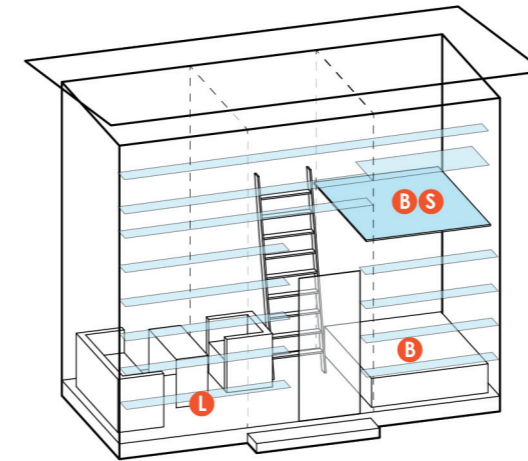
Compared to the traditional flat house with a single layer of iron sheet as wall in this area, the caretaker's house is climate friendly with a double skin system consisted of a layer of iron sheet and a layer of plywood. Air circulation system is generated with an linear opening at top of the house letting out the hot air.

4. Construction without Electricity (Pre-fabricated Method)

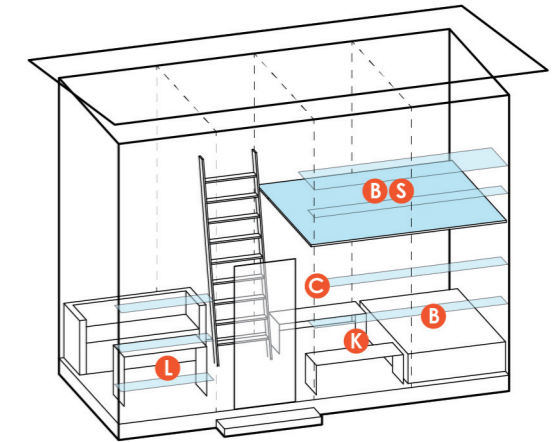
Due to the lack of electricity, the house has to be constructed purely by hand on site. A low-tech pre-fabricated method is applied during construction. Having all the timbers cut in factory and delivered to the site, the main frames of the structure are pre-fabricated in the playground by volunteers in order to simplify the construction process and minimize the labour work.

Dealing with climate issue, land area issue, financial issue, and construction issue, the layout has evolved for multiple times. Step by step, the design became shorter, smaller, furniture-less and easy to construct. Ideas contributed by each person are absorbed and shown in the evolving process.

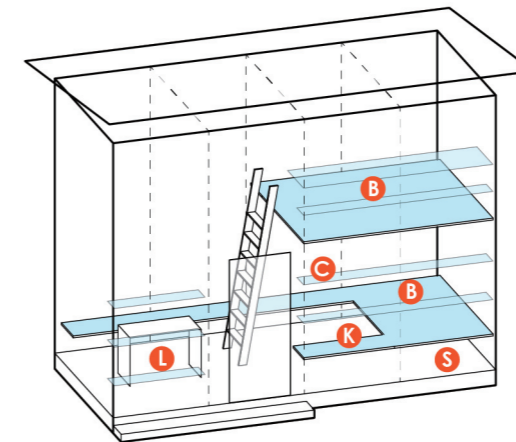
STUDY



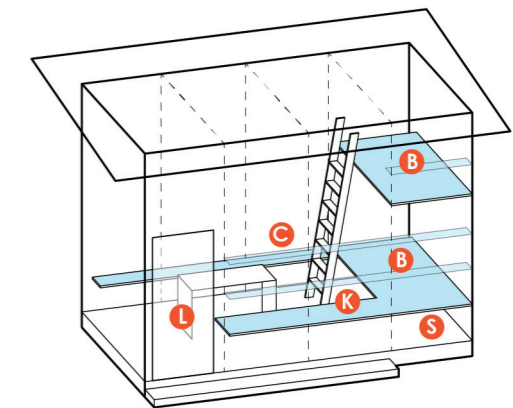
Phase 1



Phase 2

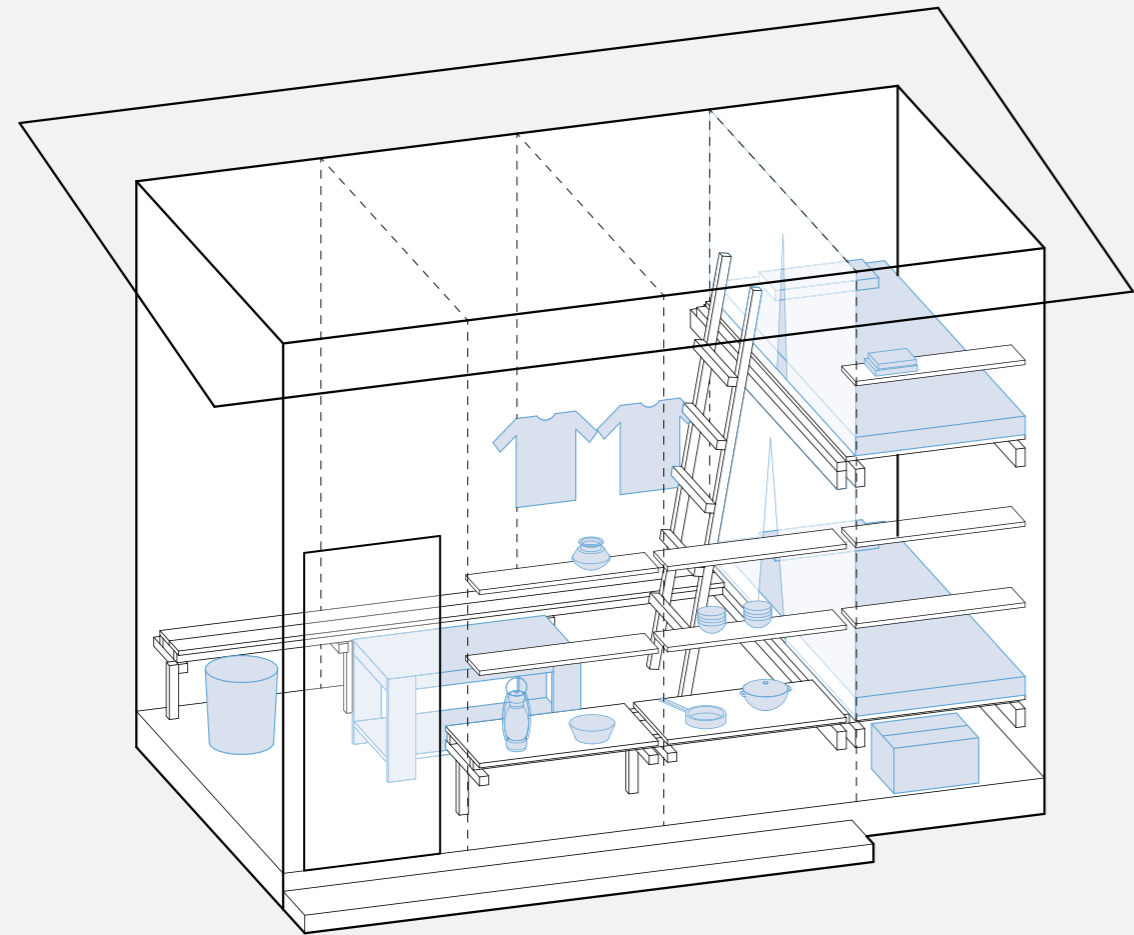


Phase 3

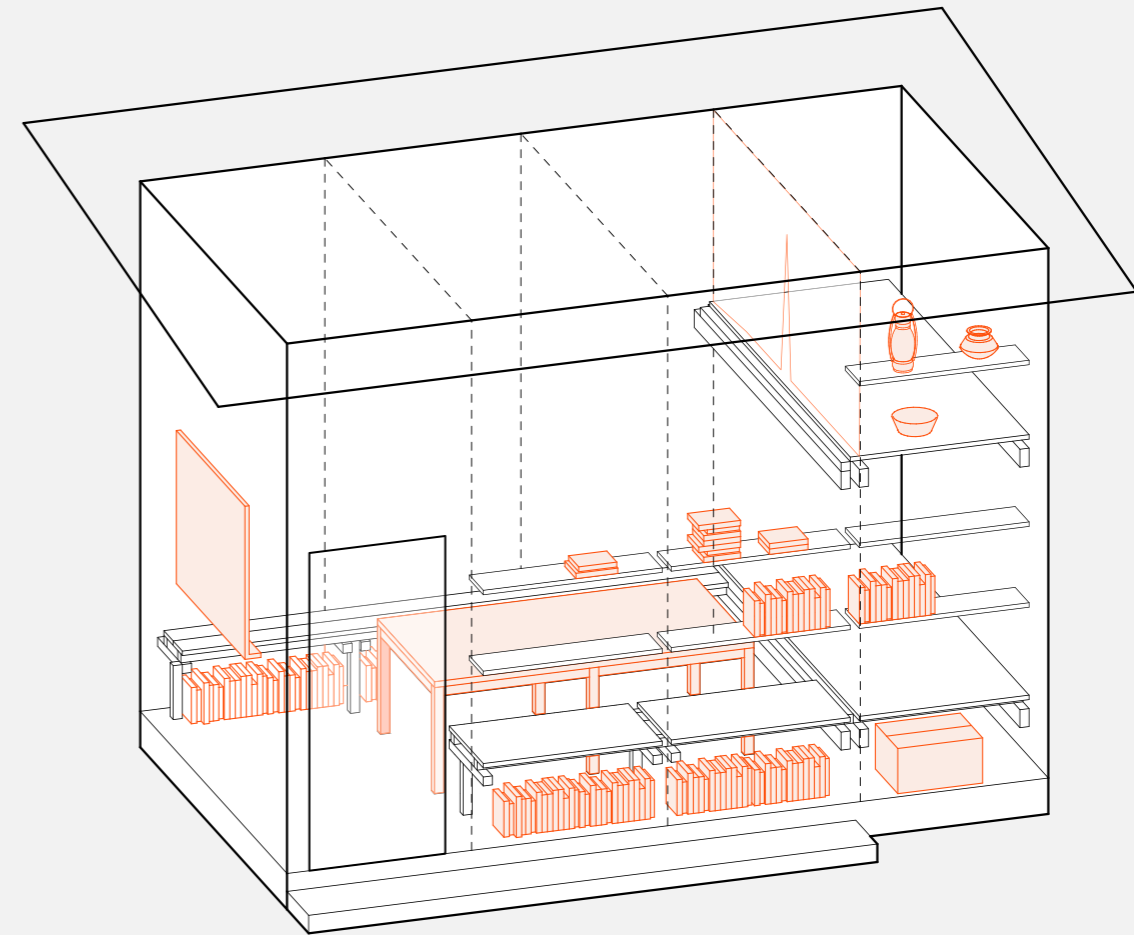


Phase 4 - final scheme

Evolving Process of the Proposal



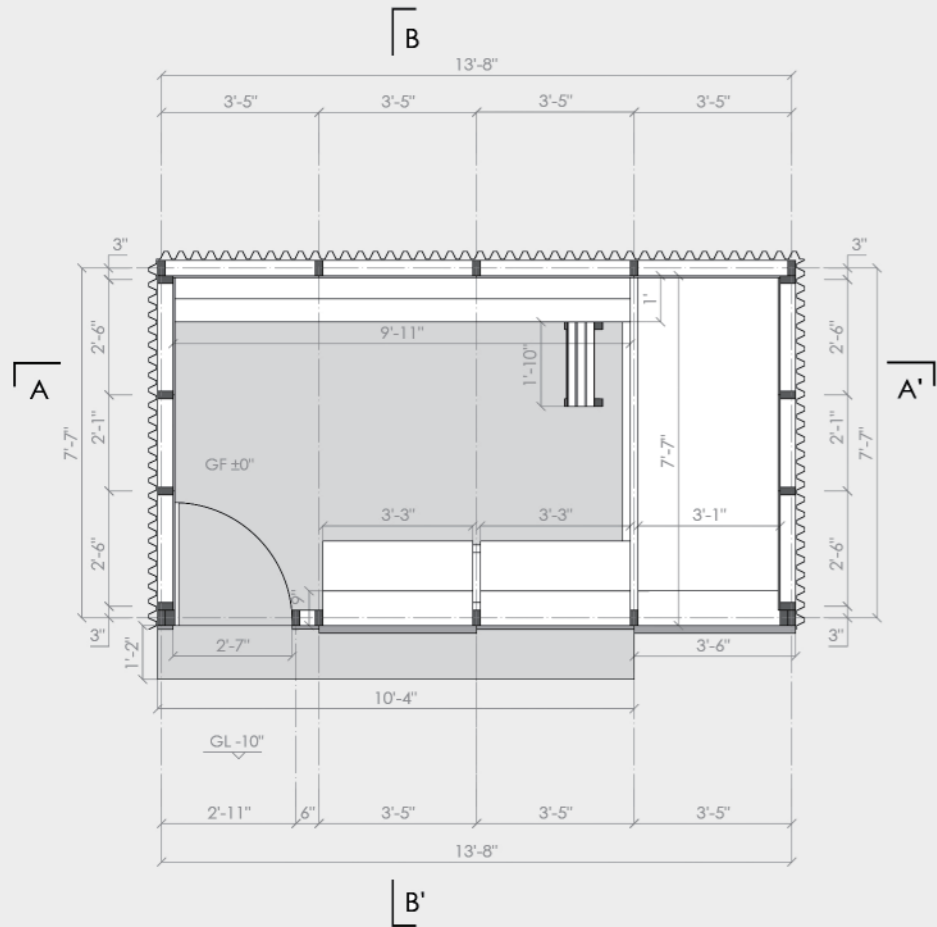
Function as Housing



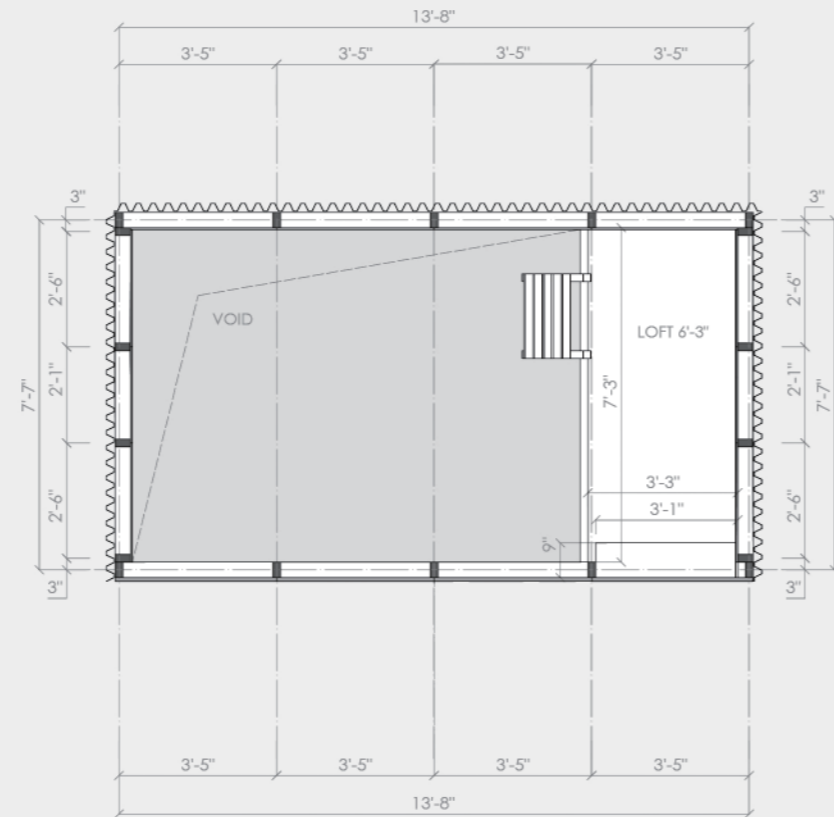
Function as Classroom

COMPLETION DRAWING

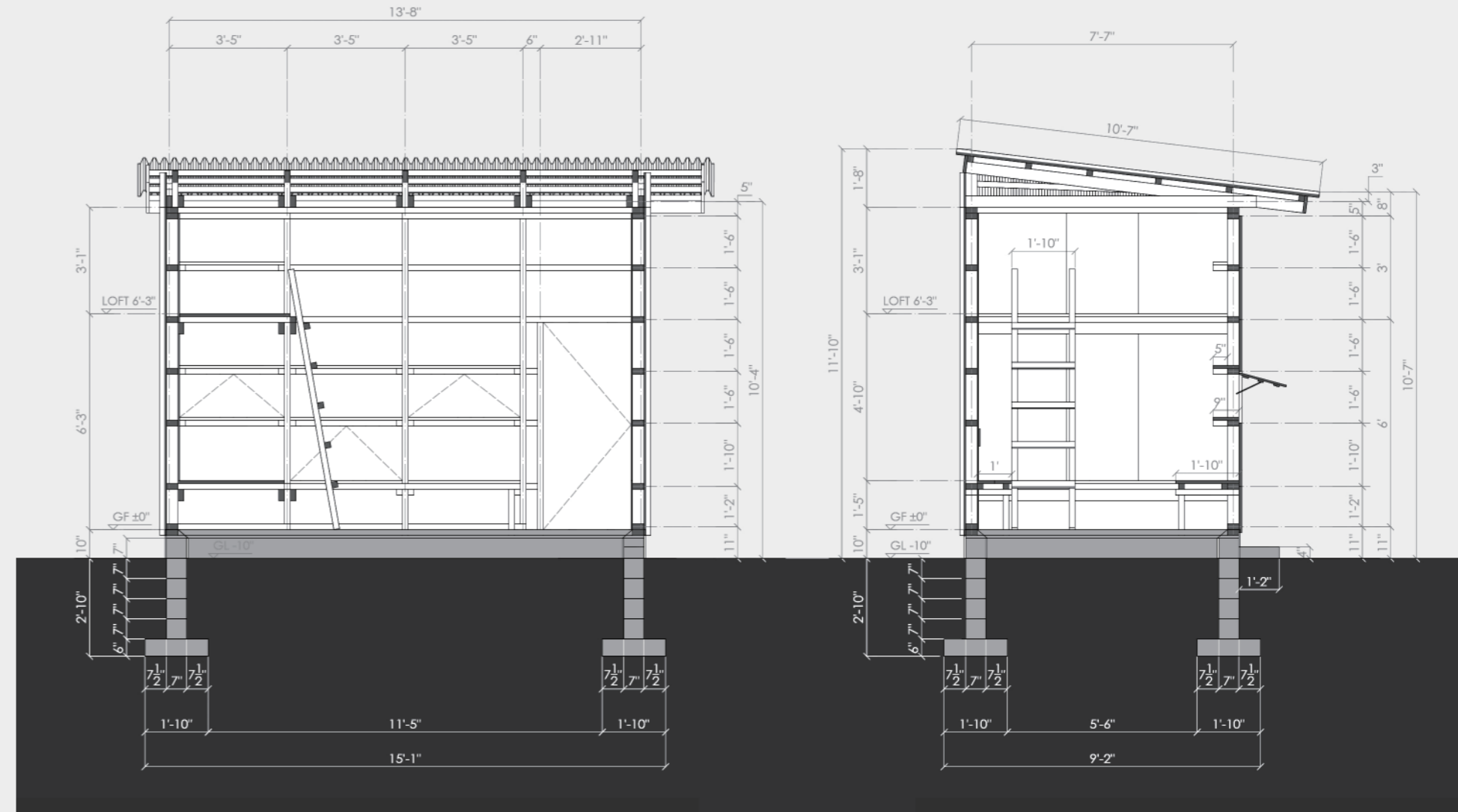
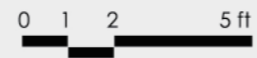
COMPLETION DRAWING



Ground Floor Plan

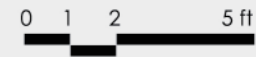


Loft Plan

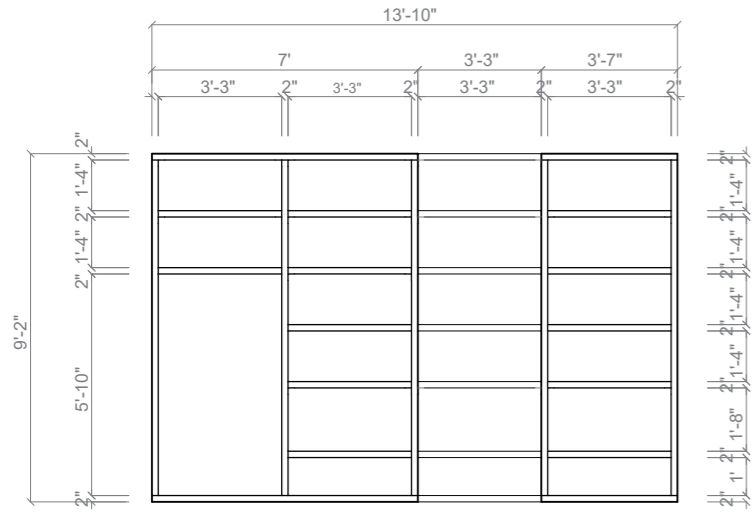


A-A' Section Plan

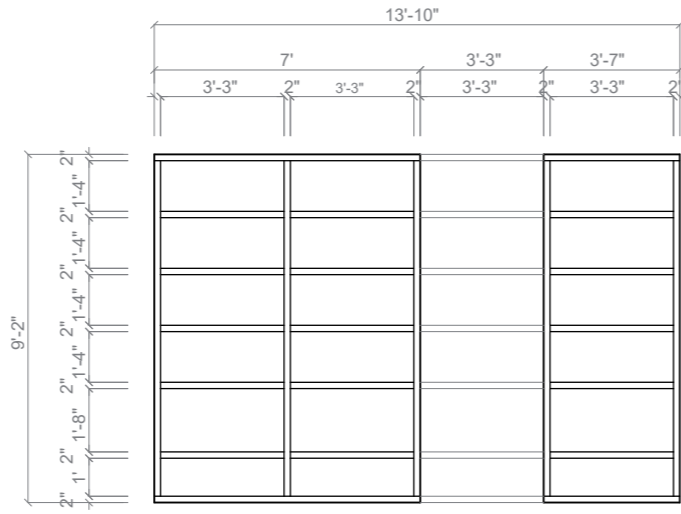
B-B' Section Plan



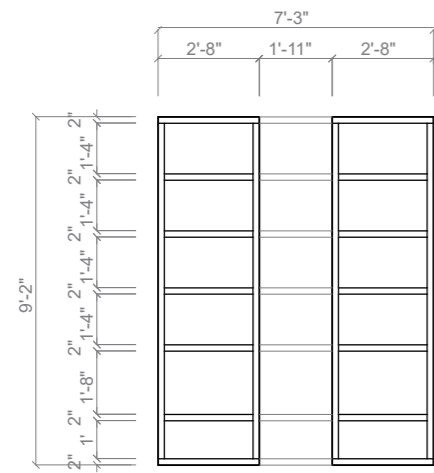
CONSTRUCTION SYSTEM



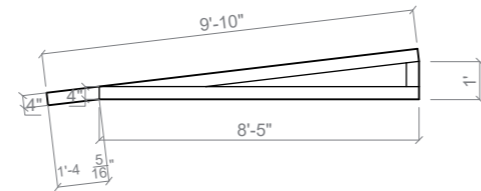
South Frame



North Frame



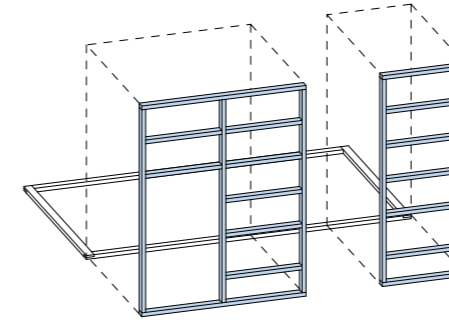
West & East Structure



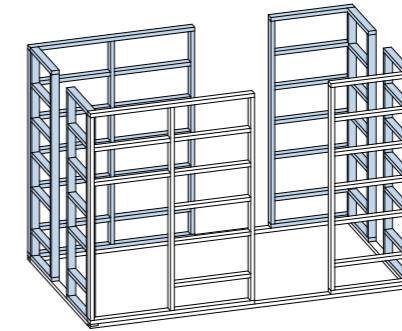
Roof Truss



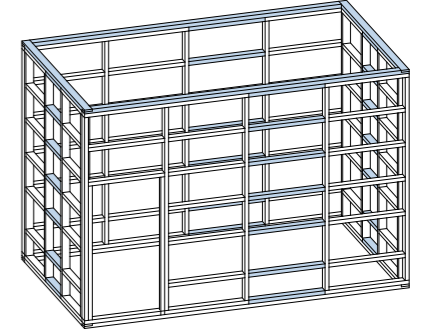
CONSTRUCTION SYSTEM



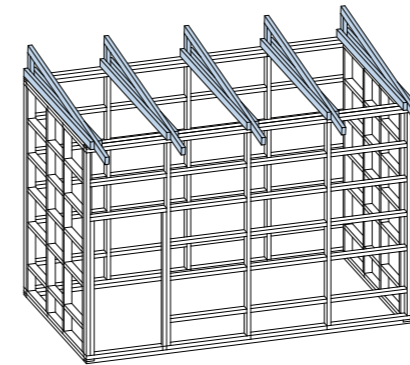
Step 1



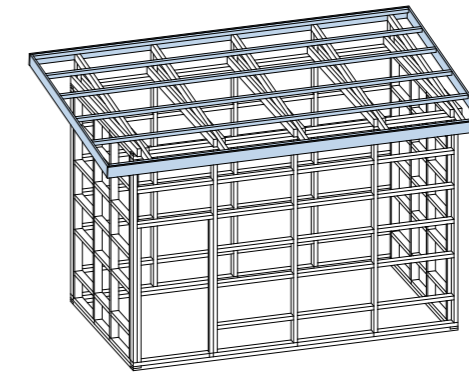
Step 2



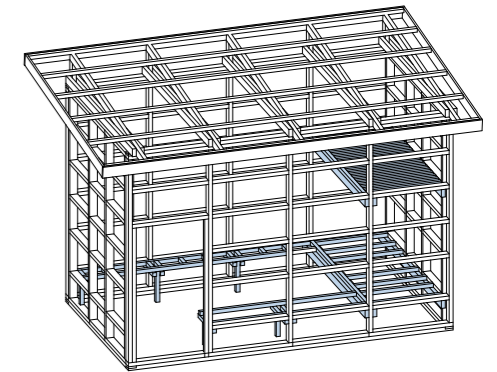
Step 3



Step 4



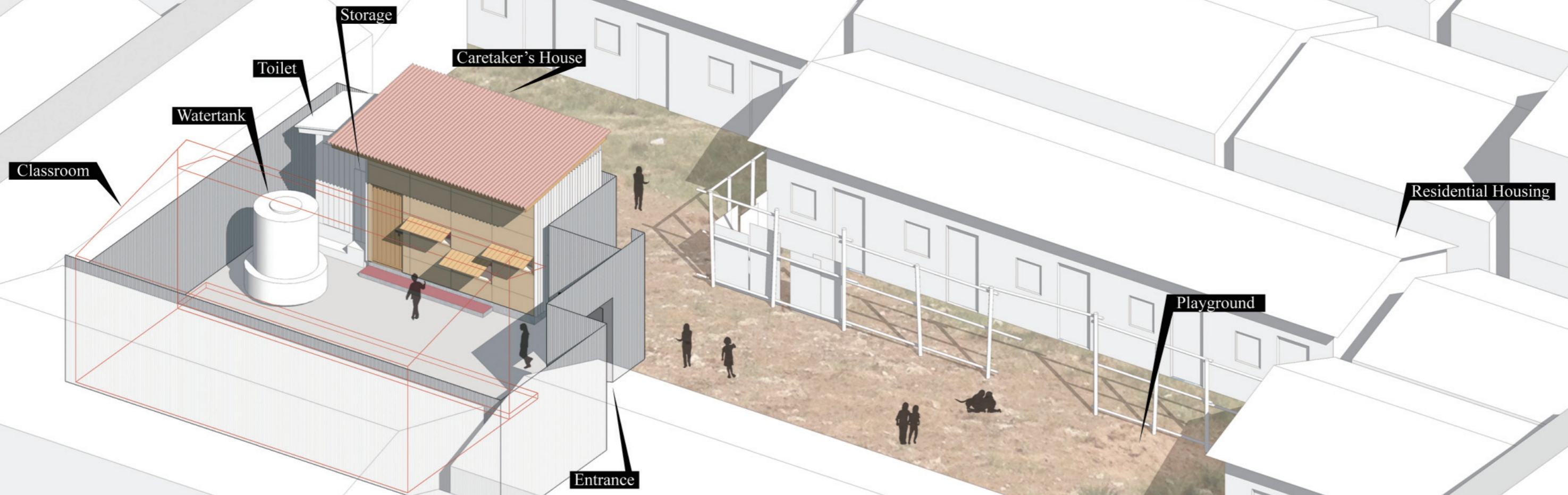
Step 5



Step 6

PERSPECTIVE

PERSPECTIVE



CONSTRUCTION PROCESS



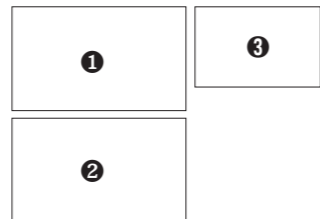
CONSTRUCTION PROCESS



FOUNDATION

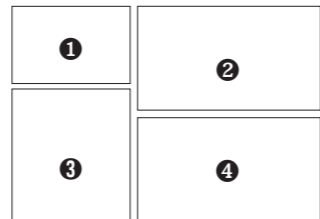


LEFT PAGE



- 1 site view from classroom
- 2 foundation work
- 3 site discussion

RIGHT PAGE

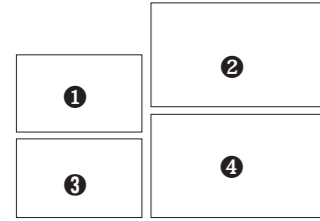


- 1 timber cutting
- 2 timber marking
- 3 timber transporting
- 4 Joshua and factory staff

PREPARING TIMBERS



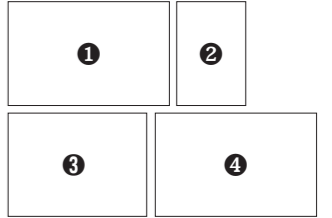
CONSTRUCTING FRAMES



1 2 3 constructing frames
4 constructing truss



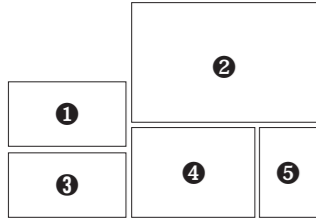
STRUCTURE



1 foundation work
2 3 frame installation
4 truss installation



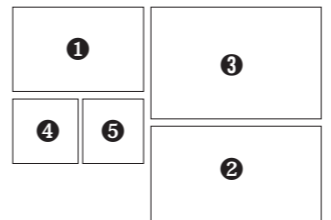
FURNITURE SETTING



①②③④ furniture setting
⑤ teaching material for school

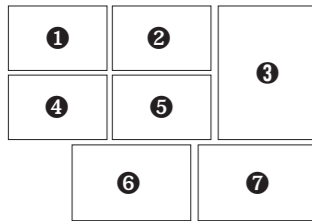


ROOF AND WALLS



①② exterior wall installation
③④⑤ interior wall installation

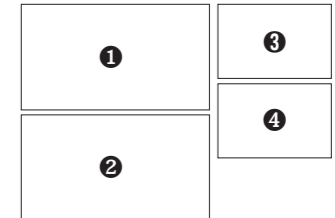
PAINT / DOOR+WINDOW / FURNITURE / FLOOR



- 1 painting exterior wall
- 2 painting shelves
- 3 making table
- 4 strengthening shelves
- 5 mixing cement
- 6 7 mortar finishing

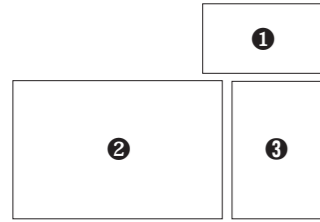


COMPLETION CEREMONY



- 1 2 during completion ceremony
- 3 4 after completion ceremony

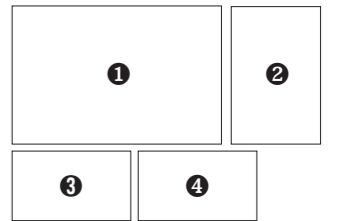
COMPLETION



- ① exterior view from playground
- ② exterior view from courtyard
- ③ interior view



COMPLETION



- ① interior view from loft
- ② bed and loft
- ③ kitchen space
- ④ loft



ORGANISER LIST



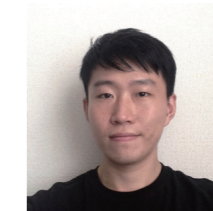
Saori Imoto
Assistant Professor

Dept. of Architecture,
Graduate School of Engineering,
The University of Tokyo
Urban Redesign Studies Unit



Dick Olango
Architect & Designer

AOAD
(Ateliers Olango Architecture &
Design)



Siqi Li
Ph.D. Candidate

Dept. of Architecture,
The University of Tokyo



Joshua Owino
Architect

SAA Secretary



Joseph Muendo Musyoka

Owner
Project Manager



Felista Wavinya Mutangili

Owner
Head Teacher



Janet

Owner
Teacher



Edwin Oyaro

Dept. of Architecture,
University of Nairobi

DICK OLANGO

The process of planning, designing, implementation and coordination of the Caretakers House at HPC was one of the most amazing experiences Slum Architects Association has ever participated in. With the teams from different parts of the world, thousands of miles apart with the limited time the success of the project would solely depend on the determination and team work. The partnership was made possible by Saori Imoto from University Of Tokyo, Arch. Dick Olango, Mr. and Mrs. Muendo of Happy Promotions Centre and Slum Architects Association being the implementing and managing partner.workday. The end product was a sustainable low cost housing made of renewable materials. Thermal and lighting science adequately designed for to not only for the building to serve its purpose but also comfort.

The students with their knowledge from design studios and classes had an opportunity to get first-hand experience as they were hands on during the implementation. With the excitement and experimentation, challenges were mitigated and exciting additions incorporated into the final product. In addition to gaining site experience of implementation, the volunteers learnt a greater part of management and role of community participation in developments in informal settlement setting. Moreover, the students and volunteers proved that such projects boost team work and networking among themselves and professionals in the built environment.

To the community, the HPC staff and pupils the project was definitely a fulfillment of their goal of having a serene environment of learning. The pupils got to meet young professions whom they would want to emulate and of course some out of class learning through bonding.

On behalf of SAA, I would like to thank all persons and parties that participated in the project and request them to show the same generosity and kindness once again when called upon. SAA will always be ready to partner with you and any other party that shares the objective of transforming lives and landscapes of cities.

SIQI LI

It is such an precious experience, an experience of learning, adjusting, creating and collaborating.

Thanks to Imoto-san for having me in this project and putting trust in me in so many aspects. If not for this project, I would not have the chance to learn from all these talented people who have much more practical experience than me such as Dick-san and Joshua-san. I am so impressed by all these students who are so willing to contribute their energy and creativity to this work, indicating how much love they have for architecture. Of course, without the help offered by Joseph-san, Felista-san, Janet-san, and Oyaro-san, we would never have this project completed.

I hope this house can open a new chapter for this schoolyard, to protect the school from lost, to reorganize the spatial relation, to redefine the daily activity and educational activity, and to make things happen.

Last but not least, as my first time being in Africa, I will always remember the vibrant color, dynamic music and the warm-hearted people. Thank you all for this unforgettable memory. I am expecting what is next.

JOSHUA OWINO

The process of planning, designing, implementation and coordination of the Caretakers House at HPC was one of the most amazing experiences Slum Architects Association has ever participated in. With the teams from different parts of the world, thousands of miles apart with the limited time the success of the project would solely depend on the determination and team work. The partnership was made possible by Saori Imoto from University Of Tokyo, Arch. Dick Olango, Mr. and Mrs. Muendo of Happy Promotions Centre and Slum Architects Association being the implementing and managing partner.workday. After putting pegs and setting leveling strings, fundis and helpers started digging foudation at once. Thanks to their skilled work, the digging were almost finished by the end of this day so that we would smoothly advance to the next step the next workday. All teams played their A+ level performance I playing their part in the whole process. Much appreciation Saori for the informed decision of putting smiles in the minor faces through facilitation of the project funding, Arch. Olango for the overall coordination, the design team led by Siqi Li who ensured the design was available on time for discussion and amendments, staff at HPC for full participation and for providing good working environment and to the SAA volunteers for timely and efficiency during implementation. The end product was a sustainable low cost housing made of renewable materials. Thermal and lighting science adequately designed for to not only for the building to serve its purpose but also comfort.

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Happy Promotion Centre Team









The construction of the new house which done on April 2017 gave the school enough security because now we have caretaker in the school compound,so security is strong.So thanks Saori, Dick and other team. The government has also done electricity connection in the school,so we have light in the school.











We really appreciate and thanks for the all stakeholder starting with Saori Imoto, Dick Olango,University student from Tokyo, Nairobi University Kenyatta University.and personal supporters like Stephanie's for their contribution financially,materially,time and effort.for the success of the school,

Thank you so much my God bless all for the work done.

PARTICIPANTS LIST

(alphabetical)

 <p>AKUMA ONDICHO Architecture 4th year, Technical University of Kenya</p>	 <p>DON LANGAT Quantity Survey 1st year, Technical University of Kenya</p>
 <p>BOR CAROLYNE Architecture 4th year, University of Nairobi</p>	 <p>KEVIN OBWOGI MACHORA Bachelor of Building Construction Technical University of Kenya</p>
 <p>ORANG'I ORINA COLLINS Architecture 4th year, Technical University of Kenya</p>	 <p>MAINA POULET Quantity Survey 1st year, Technical University of Kenya</p>
 <p>CYNTHIA ODHIAMBO Building Construction 1st year, Technical University of Kenya</p>	 <p>MARY KURIA Architecture 4th year, Technical University of Kenya</p>

 <p>MIDRED SIMEKA Architecture 4th year, Technical University of Kenya</p>	 <p>NYAGAYA SAMUEL PETER Architecture 4th year, University of Nairobi</p>
 <p>MURAYA WAMUTITO Architecture 4th year, University of Nairobi</p>	 <p>SOLOMON NDIRANGU Architecture 4th year, Technical University of Kenya</p>
 <p>NAFTALLY KIMATHI Architecture 4th year, Technical University of Kenya</p>	 <p>VICKY WANJIKU Architecture 4th year, Technical University of Kenya</p>
 <p>NDENGA CHRIS Architecture 4th year, Technical University of Kenya</p>	 <p>WINNIE MUTEISI BAHATI Architecture 4th year, Jomo Kenyatta University of Agriculture and Technology</p>
 <p>KINYUA ROSE NDUNYU Architecture 4th year, Technical University of Kenya</p>	 <p>JUSTUS MWANGANGI Fundi</p>

NYAGAYA SAMUEL PETER

Nothing has ever been of such impact to my perspective of life as that I got from the experience in Mukuru kwa Njenga project at Happy Promotion Centre. The feeling of fulfilment and joy that I got from seeing a family happy because of the little things that I once took for granted is completely ineffable. When I joined Slum Architects, I never had envisioned myself on a mission of painting smiles on people's faces, this project provided me the opportunity to do just that. As a student of architecture, I spend a lot of time in studio designing stuff that I will never see by the street, in this project I had a chance to take part in building something that for years will stand as a testament to our existence. It was as well a great learning experience for me. I got to learn so much about construction planning, control and management.

ORANG'I ORINA COLLINS

Architecture is more than the design of magnificent structures touching the sky, or basic spaces we get to call home. It is a significant tool in improving the lives of people, most importantly those with little or no ability or capability to establish good living environments. It is in this light, that the University of Tokyo, Architecture Lab teaming up with Slum Architects, Kenya linked to erect a caretaker's house for the existing Happy People Centre School in Mukuru kwa Njenga slums. This was necessitated by the need of a resident within the school compound for security purposes, with the reports of vandalism and theft of learning materials.

On a personal account, the two weeks taken to erect the structure were productive, educative and ended with the provision of a safer learning environment for little adventurous students in the school. With an elaborate design in place, the team wasted no time to get the work moving, addressing one challenge after the other. This was all possible with the guidance of the Slum Architects patrons and the University of Tokyo team namely, Siqi LI and Saori Imoto. With all the nails hammered, timber frames erected, trusses put up and metal sheets nailed in place, the end results was a magnificent structure, smiles on faces, a lot learnt , friendships built and most importantly a safer studying environment for the students. Evidently, a step forward towards a better future.

KINYUA ROSE NDUNYU

Architecture as a significant tool in improving the lives of people, was clearly demonstrated in this project. The University of Tokyo, Architecture Lab teaming up with Slum Architects, Kenya linked to construct a caretaker for the existing Happy Promotion Centre School in Mukuru kwa Njenga slums'. This was for security purposes, following reports of vandalism and theft of learning materials.

The two weeks taken to construct the structure were educative, productive and provided a safer learning environment for the young students in the school. With the design in place, nails were hammered and the structure erected in record time. The Slum Architects management and the University of Tokyo team namely, Siqi LI and Sauri Imoto guided the whole process to ensure quality work was done efficiently. It was a process that entailed learning experiences, building of friendships and a safer studying environment for students. A step forward towards a better future.

WINNIE MUTEISI BAHATI

Beyond my expectations the mukuru hpc project was an eye-opening ,learning experience that I will never forget.Not just for the technical experience but for the experience of a different urban setting. It was a great way of networking with fellow students from other universities not forgetting the supervisors and the kids at the school who made it worthwhile with their daily enthusiasm. I sincerely thank the organisers for giving us this opportunity to participate in this once in a lifetime amazing project and hope to partner again in the future to build bigger projects.

SOLOMON NDIRANGU

The experience was fabulous. It was a process of sacrifice and learning through finding opportunities, working with people and inspiring their spirits, experimenting and building a better dwelling example in this sea of fallen architecture.

Sacrifice had to be our driving force. Am talking of the real definition of voluntary, exploration and risk taking job. The mission of changing people's lives through architecture was our main objective which saw the small house from its substructure all through to its habitable state. All done by people who seek standards and quality living. Who wouldn't admire that?

Reflecting on waking up early, walking on streets that most city dwellers fear, and trusting environments that have a reputation of crime, diseases and all versions of poverty to provide a practical opening was splendid. We acquired skills that range from construction, interacting directly with architecture to surviving in non-friendly environments through this wonderful provisions as we contributed to our capacity. I think the willingness and presence of members is worth recognition.

Long live the association and its partners. Build to change people's lives, build to give people a character.

CYNTHIA ODHIAMBO

It was a great honour to take part in the Mukuru-kwa-Njenga (HPC) project. Personally I'd never been to Mukuru before so it was exciting to be in a new environment altogether. Right from the beginning to the very end, I got an experience like no other with hands on experience and having the chance to learn practically every other thing we'd been taught in class. The hosts were welcoming and supportive of our contribution, my sincere gratitude goes to them. Getting to meet the students at Happy Promotion Centre was also exciting ,the pupils were fun to interact with and bubbly, I would like to wish them the very best in their education.

Right from the setting out the foundation to the completion of the roof it was a great learning experience. My fear for heights was challenged when I had to climb up the structure and I must say that was an achievement I had never thought of.

The project was a success and am once more grateful for the chance to take part in it.

KEVIN OBWOGI MACHORA

Am honestly humbled to express my experience of views, thoughts and exposure at the above mentioned HPC project .Much taken by the intelligence employed in the design and construction of the structure. All comes in regard to available space, location, functionalism and site on which it was set out to bring a tangible structure .It was such a pleasant encounter....Especially at the onset of the project .I wondered how possible it was but with time it was a twist of my perception .The construction works really changed the physical appearance of the place as well as the surrounding environment, community.

Meeting the occupational needs of the users is something which impacted permanently on my career. Starting with Thermal insulation properties, wind, rainwater control structural measures and finally ventilation and air flow. The space was a limiting factor but at last I could figure out the plan on paper coming to fruition. Indeed it was really educative to be engaged in the project. The exposure was awesome. The practicality of the design was an art worth to emulate. Lastly appreciating my fellow students who combined efforts and knowhow to bring immaculate success of the structure .The sacrifice made was worth encouraging. Surely serving humanity to bring light to The Mukuru settlement. To our team leaders I saw good coordination which enabled us complete tasks timely.

To the pioneering minds of the project appreciation for your kindness not forgetting your brilliant design idea .kudos. However, we faced some minor challenges such as controlling site water upon the foundation trench excavations. But in all a remedy was sought early enough.

Thanks to God for enabling us complete the project .God bless us all .Miss to have another similar exposure.



Group Photograph after the Ceremony

Planning, drawing, word, photo, and model by Saori Imoto and Siqi Li.