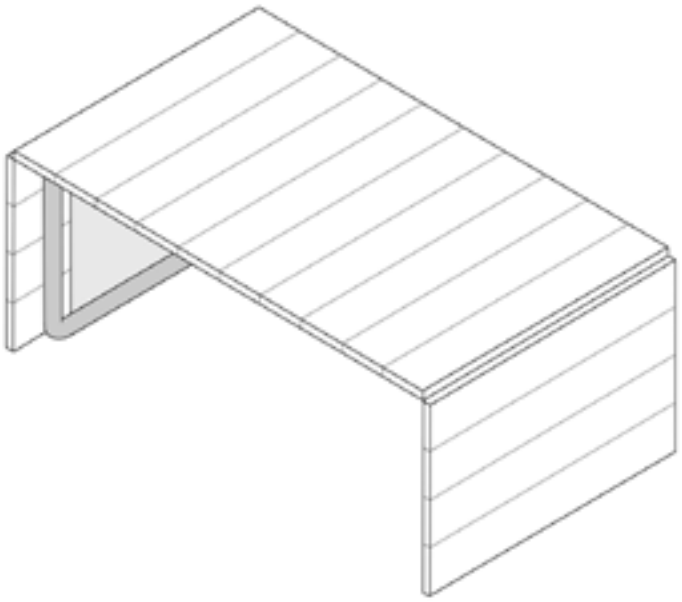
PORTING WORK

THE LOG FOR लोग



MOVING IN THE MOUNTAINS

MOVING IN THE

MOUNTAINS

S24FD001

SUMMER SCHOOL 2024

CEPT UNIVERSITY

GUIDED BY: PRITI RAO, SHUBHRA RAJE
ASSISTED BY: VIBHUTI SHAH

ABOUT THE

WORKSHOP

Design does not begin, or end, with a product. It is a product of the localized practices with a direct impact on locals and visitors alike. Its essence lies in the process of discovering a problem shared by many people and trying to solve it, engendering an empathy in our common, shared values.

Based out of Satoli (Uttarakhand), the workshop will focus on an issue endemic to mountain communities - mobility. With its dramatic topography and extreme climate, mountains present unique challenges to move men and material for everyday tasks, and for occasions. Participants will create new systems of porting (e.g. portable kitchens, palanquins etc) during their stay at Satoli. We will work with materials available locally and produce prototypes for each proposal.

It should be noted that our proposals will exist within a stable of fully mature designs that have been cultivated through the region's history, difficult to surmount in a short period of time. However, with the clarity of ideation through identifying problems that the more conventional solutions may hold within them, we hope to decipher the essence of design found within the gaps between the new and the conventional.

OUR ACKNOWLEDGEMENTS

We extend our deepest gratitude to Spacehouse Himalayas for providing us with this amazing opportunity. We are deeply grateful to Sukoon Homestead for hosting us.

We are also immensely thankful to the community of Satoli for their warm hospitality and unwavering support. Special thanks to the people of the villages of Mona, Satkhol, Peora, and Kaphura. Your contributions and welcoming spirit have enriched our journey.

Additionally, we thank Dr. Sushil, Kundanji, Gopalji, Lomit, and the other staff members for facilitating all our requirements. Thank you to Basant bhai, Raju bhai, Rakesh bhai for the most awaited meals and tea breaks. Your support and dedication ensured our experience was seamless and productive.

A heartfelt thank you to Mayank, Prashant, Vivek, and Paras for joining us in the workshop. Your assistance in designing, understanding the local culture, and facilitating cultural exchange has been invaluable. Special thanks to the expert Ranjeet bhai and his team for helping us make our designs exist physically.

We would like to express our sincere appreciation to our esteemed guest lecturers: Purin Phanichphant, Swapnaa Tamhane, Giovanni Innella, and Ghanshyam Sunal. Your insights and expertise have significantly enhanced the depth and quality of our work.

Lastly, a big thank you to Prof. Priti Rao and Prof. Shubhra Raje for hosting this workshop at such an amazing location. Your guidance inspired us to work towards solving the problems we encountered and to learn deeply about the terrain, people, culture, social, and economic structure. You also encouraged us to explore new methods of learning and the design process.

Thank you all for making this endeavor a resounding success

PORTING

WORK

The mountains had various terrain types—rocky, muddy, and dry grass—making resource transportation difficult, especially since manual carriage was the main method available. The effort required to carry loads increased with the distance of the load from the center of mass.

The village faced significant population displacement due to employment opportunities elsewhere, raising the average age of its residents. Government incentives were minimal, leading to a lack of innovative solutions for issues like wild animals damaging crops. This increased the need for effective porting solutions in the mountains.

Jobs in the mountains require flat horizontal surfaces, which are hard to transport due to weight distribution and limited carrying options. To address this, the proposed design focuses on modularity, portability, repairability, manufacturability, ease of assembly, and durability, offering a lightweight and foldable solution for transporting workspaces.

MEET THE

TEAM

AKSHITH SANTOSH

KASTURI MITTAL

MILEN FRANC

RIYA CHERIAN

SAYANTAN CHOWDRY

MAYANK MEHRA

LOCAL GUIDE

DRASHTI DESAI

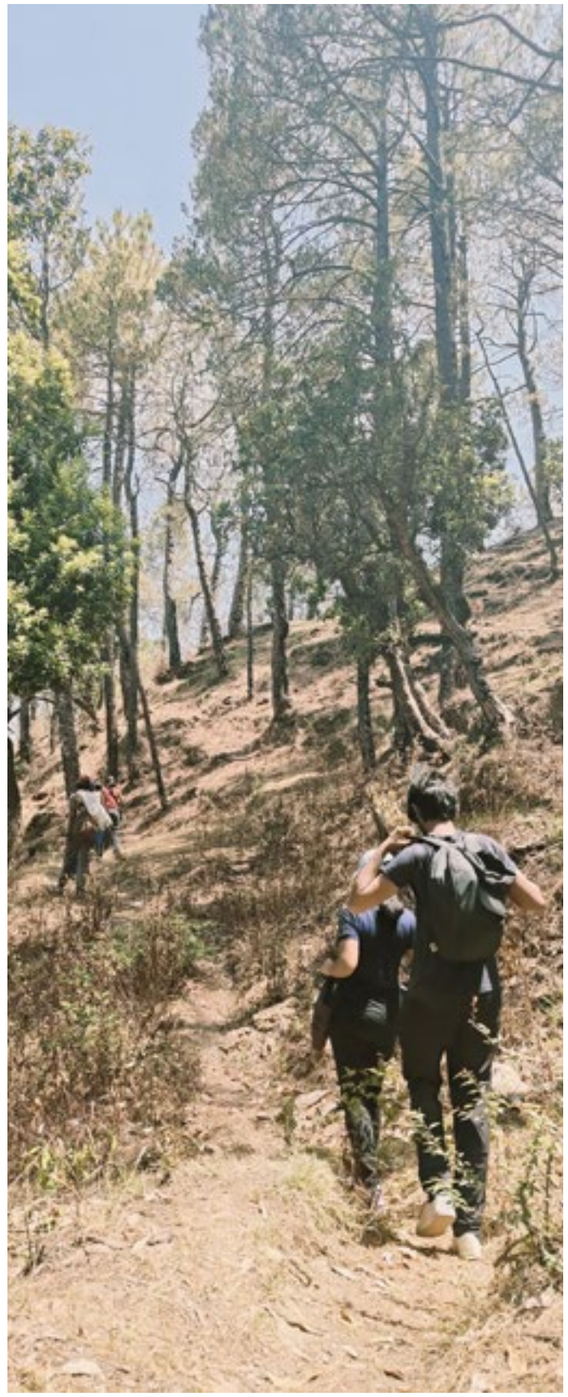
VOLUNTEER

01

VILLAGE STUDY

WALK

We visited Mona, a nearby village, where we observed changes in the terrain. We also spoke with the local residents, gaining insights into their livelihoods, the village's history, and its evolution over the years.

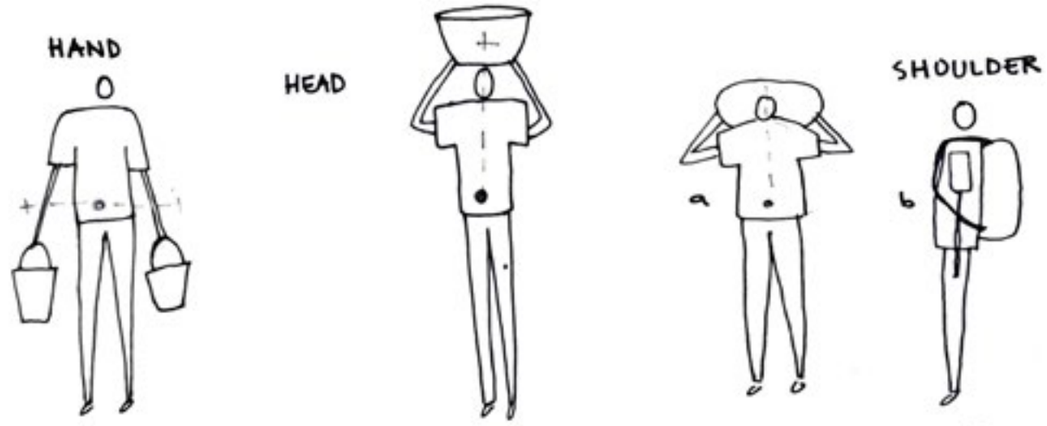


We observed various changes in the trails: narrow sloping streets, wide roads, slippery paths with dry branches, and several others.

IDENTIFYING WORKSPACES

We saw people at work and observed their workspace context, including their postures, the types of tasks they performed, the tools they used, and how these factors influenced the workplace environment.

INFERENCES FROM TERRAIN



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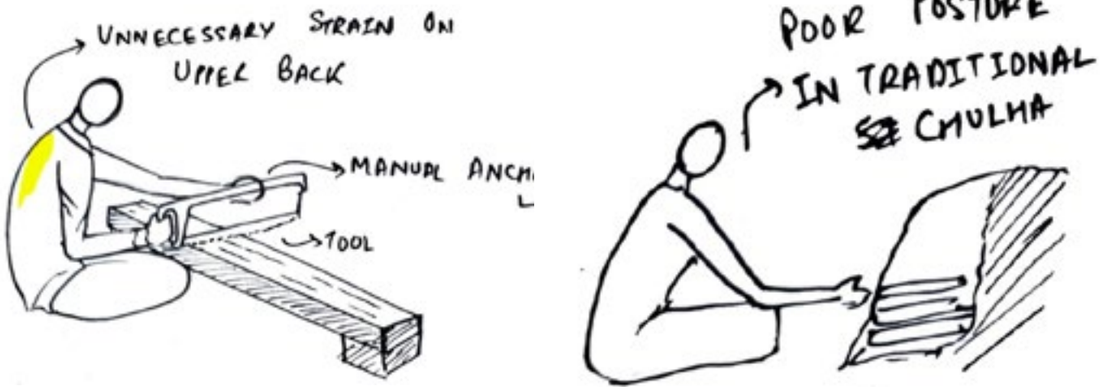


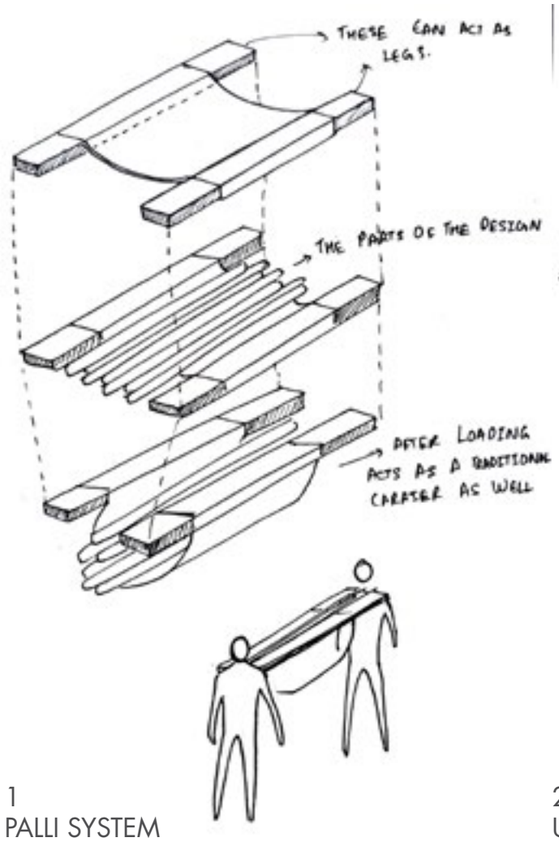
INFERENCES FROM PEOPLE

02

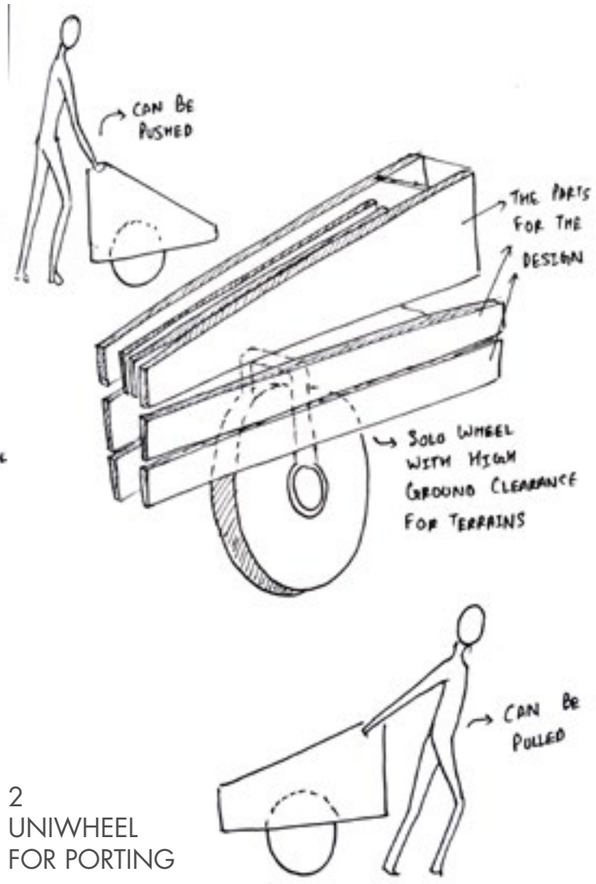
IDEATION

DESIGN CONCEPTS

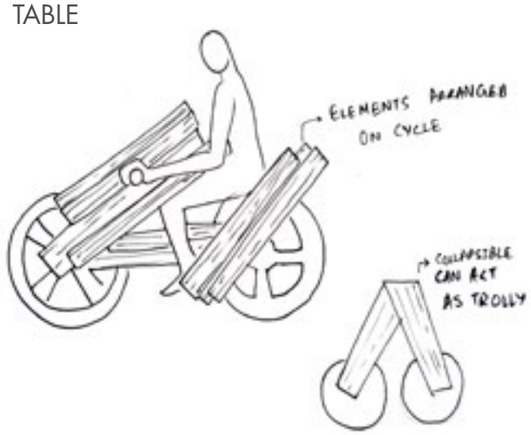
Based on the insights gained from our visit, we endeavored to acknowledge the challenges and develop concepts aimed at providing solutions. The primary challenge identified was portability, which became the central issue we sought to address.



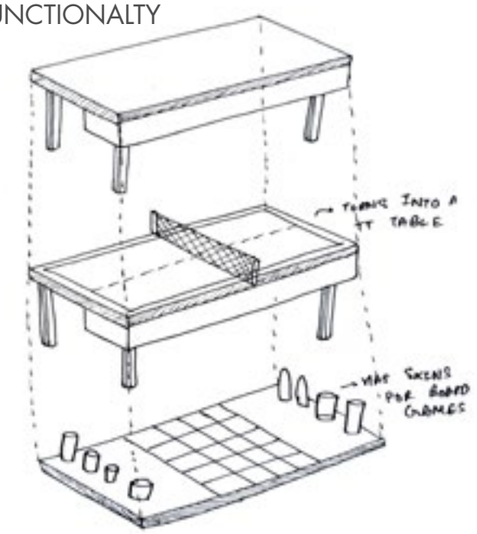
1
PALLI SYSTEM



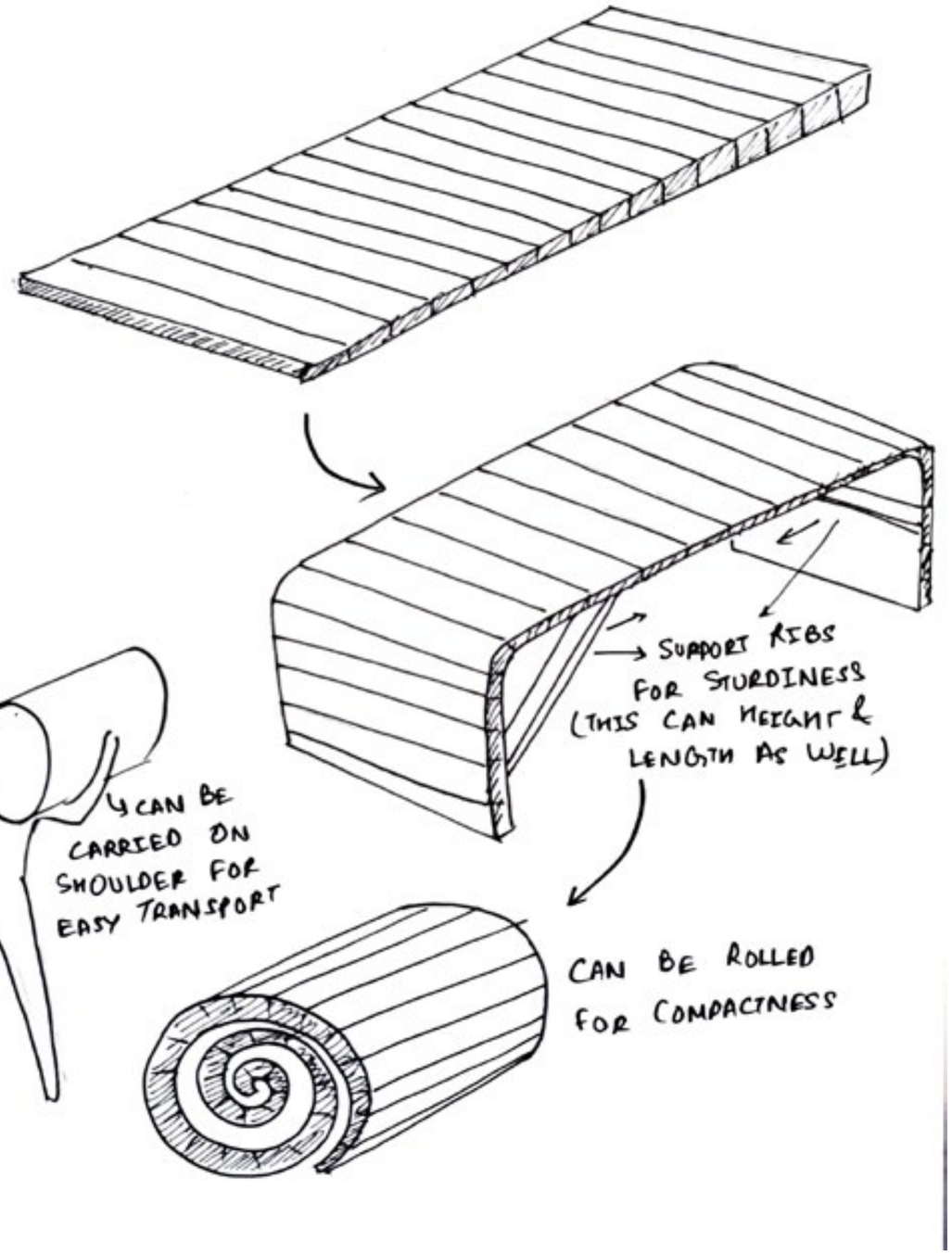
2
UNIWHEEL
FOR PORTING



3
CYCLE UNFOLDING TO
TABLE



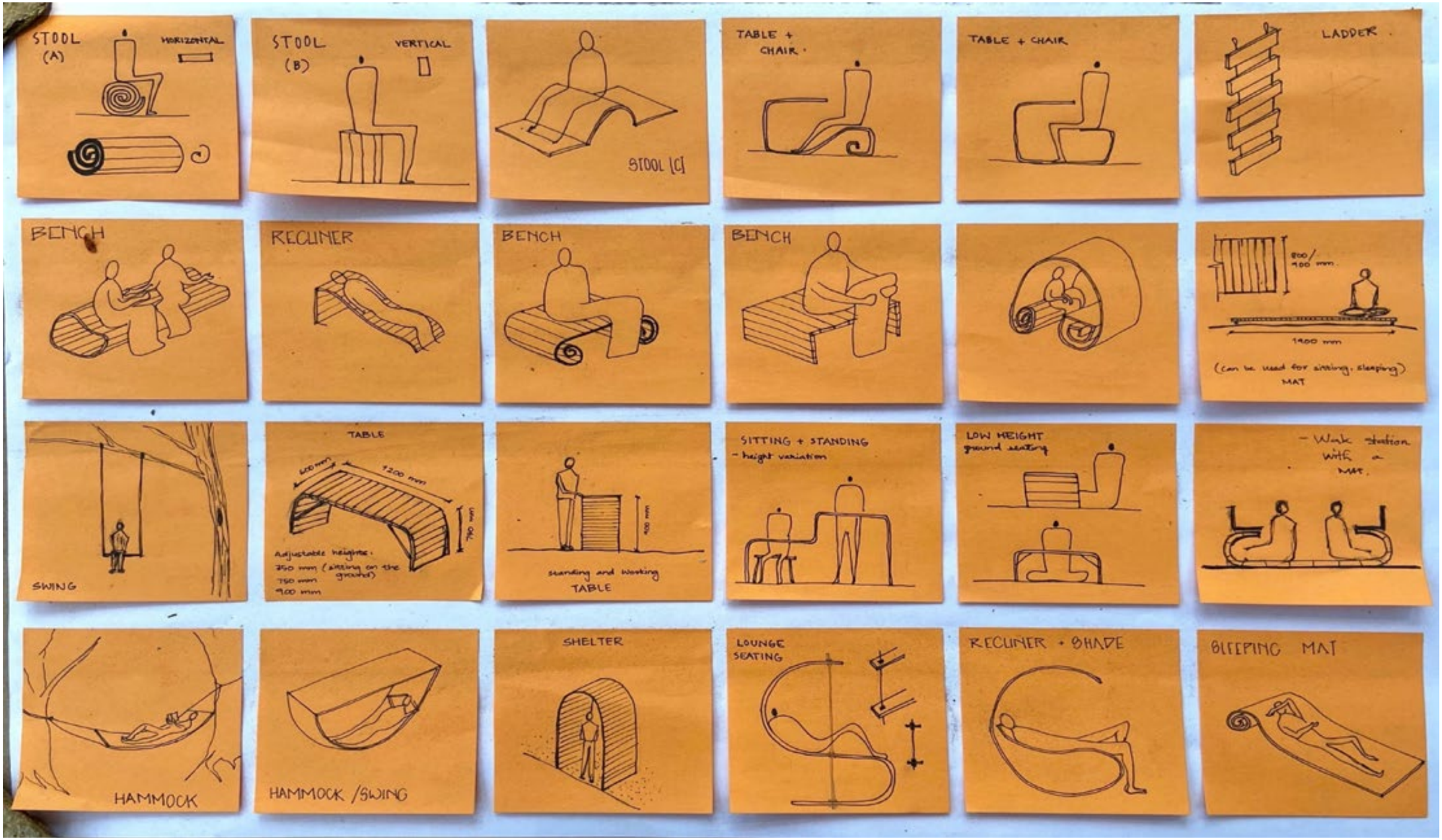
4
TABLE HAVING
MULTIFUNCTIONALTY



The concept presented here illustrates how the table can be rolled up into a compact log, allowing it to be conveniently carried on one's shoulder. This design ensures both ease of transport and space efficiency.

INITIAL

CONCEPTS



APPLICATION BASED

VARIATION

As this consists of a series of interconnected planks capable of adopting various curvatures, it transcends its primary function as a table and can be adapted for numerous other applications.

STOOL

ARCHED STOOL

TABLE

STOOL WITH TABLE

LOUNGE CHAIR

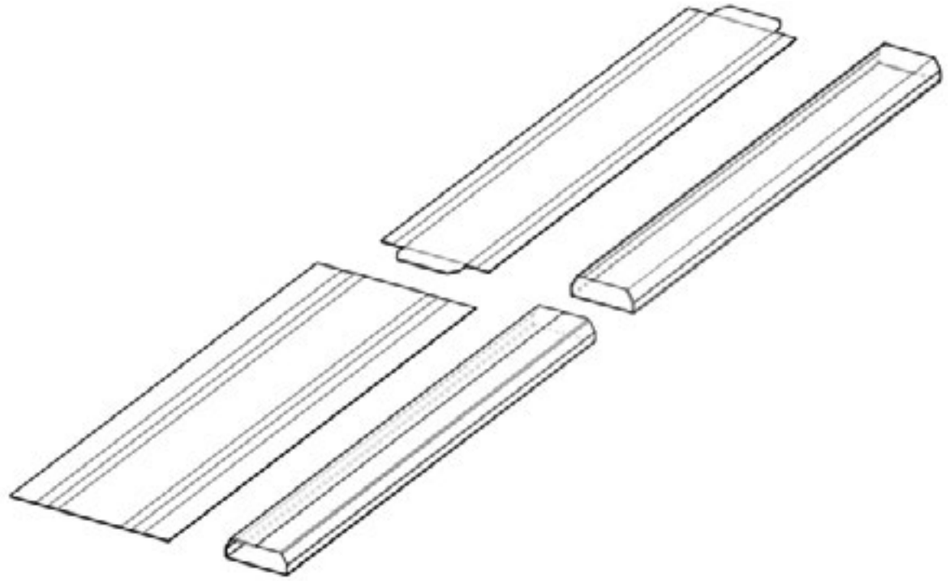
HAMMOCK

ABRASION MAT

HORIZONTAL SURFACE

VISUALIZING

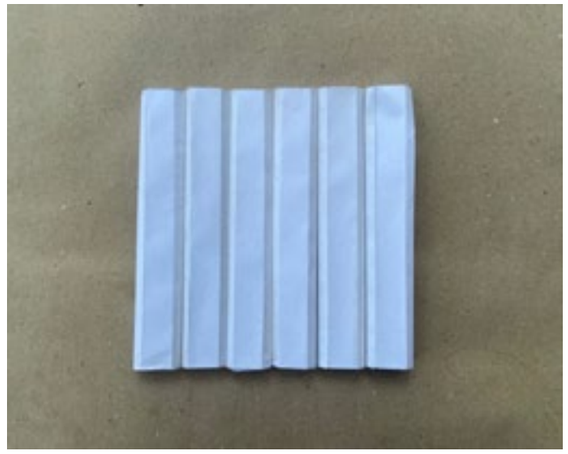
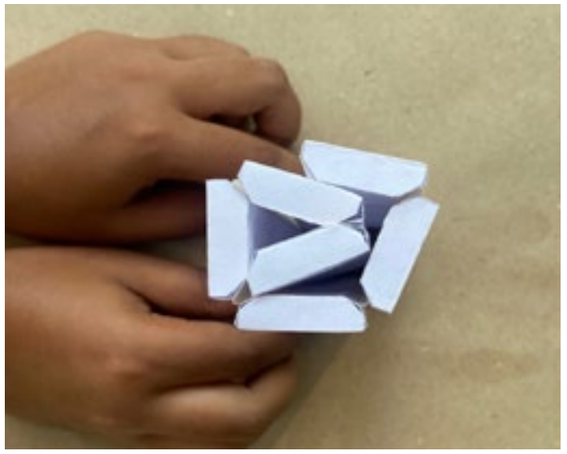
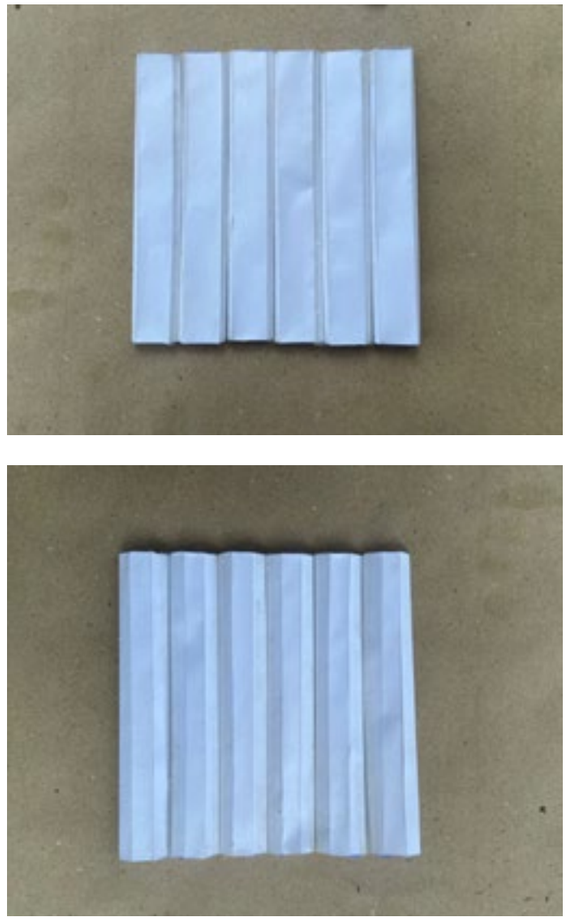
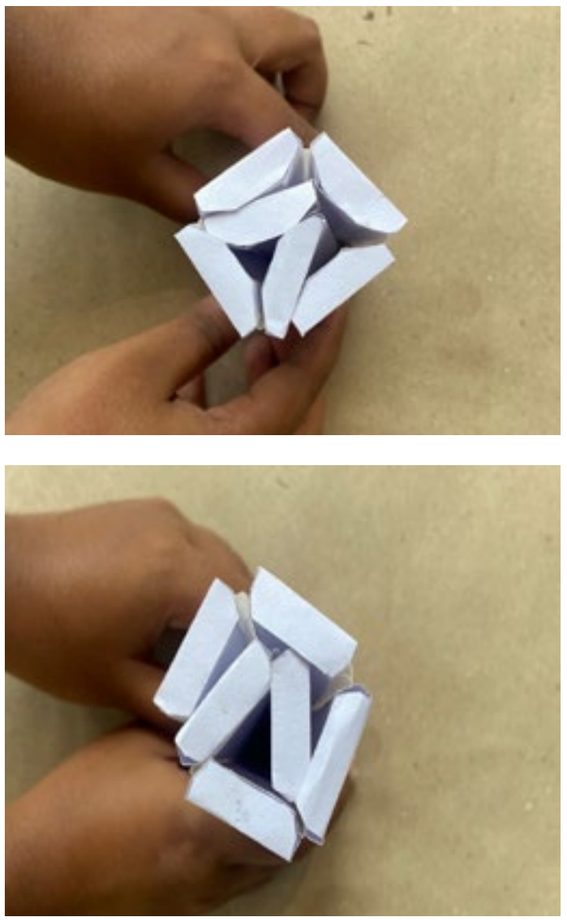
THE APPLICATIONS



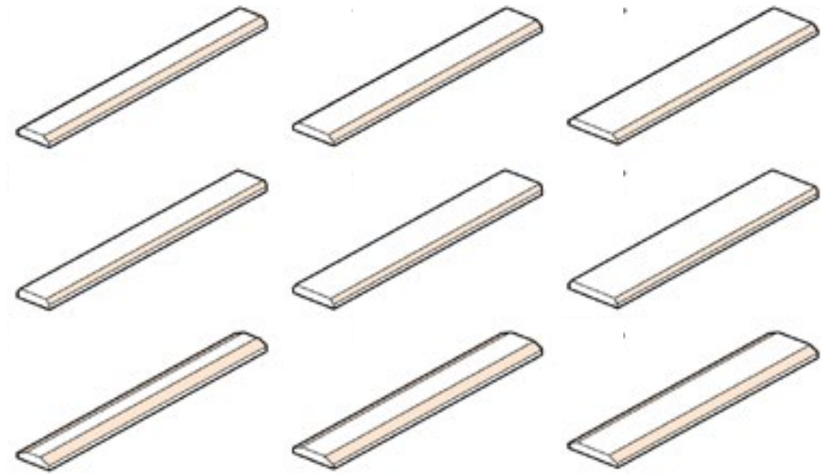
Sheet metal, which can be precisely laser cut, is also lightweight and portable, making it an ideal material for creating the desired product.

VISUALZING DIFFERENT

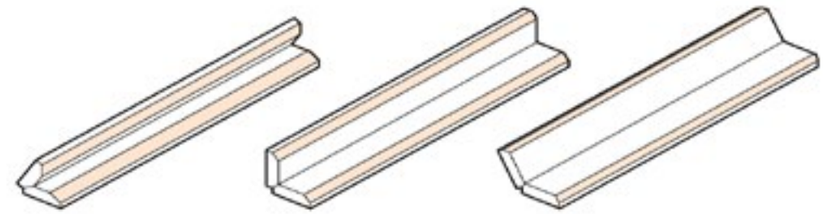
MATERIAL

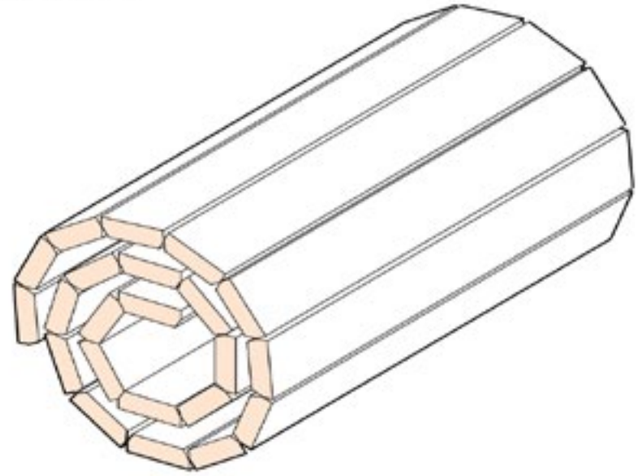





HOW WILL IT
FOLD



Chamfer angle is proportional to the packing density of module. 30 Chamfer gives the most practical curve in most cases. 45 Chamfer is suitable 90 bends.





We conceptualized wooden planks chamfered at various angles to determine the configuration that achieves rollability with the smallest possible roll diameter.

PRESENTING

THE IDEA

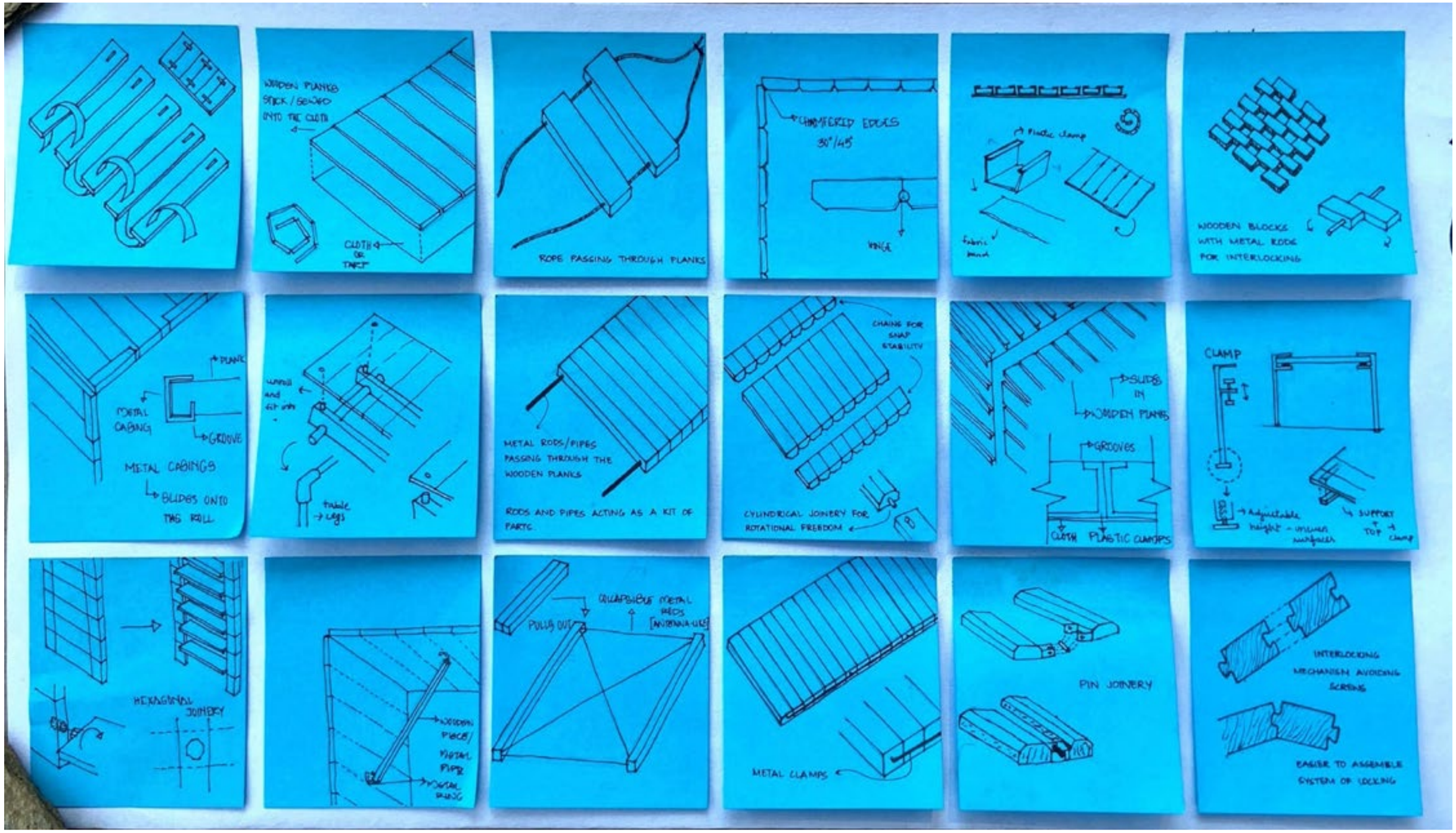
The initial jury concentrated on the overarching concepts, deliberating on the various inferences we derived from our village visit. These insights informed our subsequent process, guiding us as we developed several design concepts.

03

TRAIL AND ERROR

PROTOTYPING

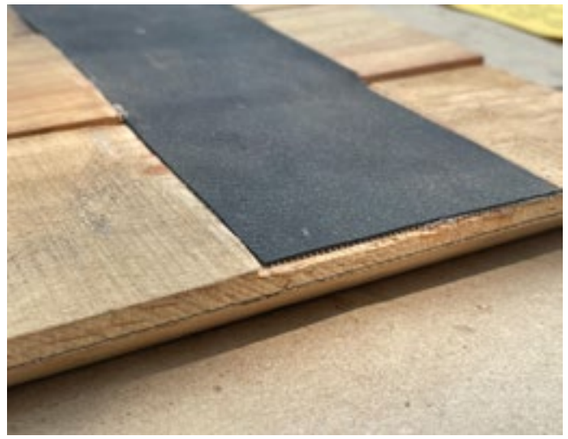
We meticulously endeavored to bring our envisioned iteration to fruition, initially crafting it from foamboard and cardboard, and ultimately transitioning to the original material, wood. In this process, we explored various joinery techniques to enhance both foldability and structural integrity.

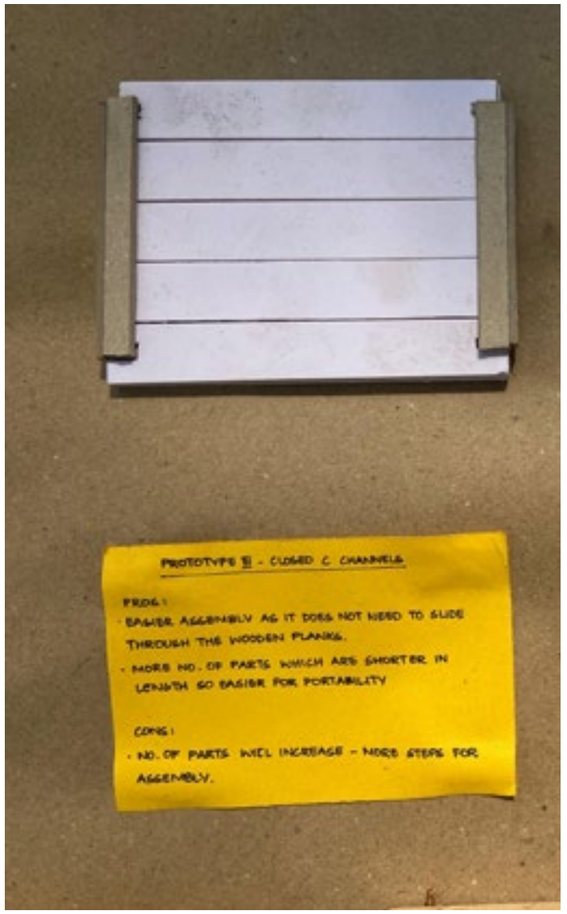


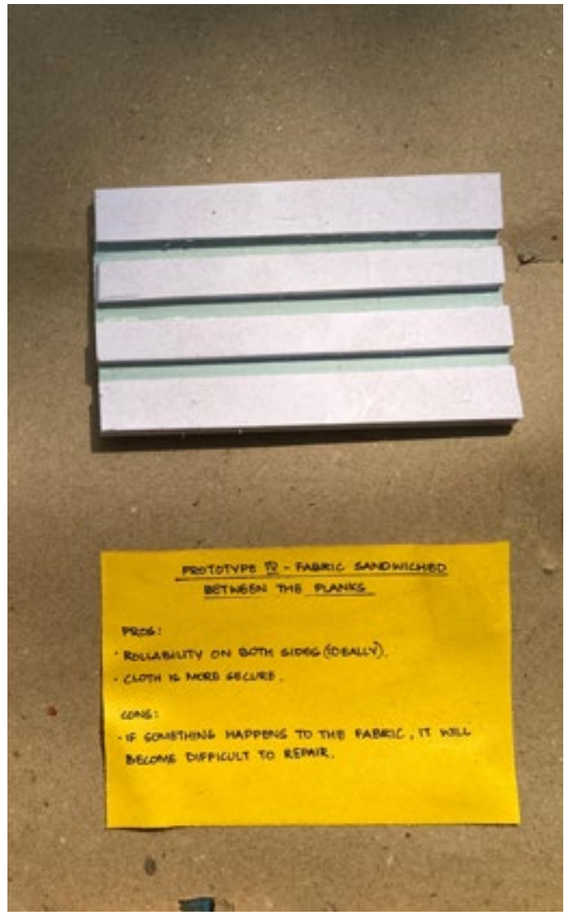
INTIAL EXPLORATION OF

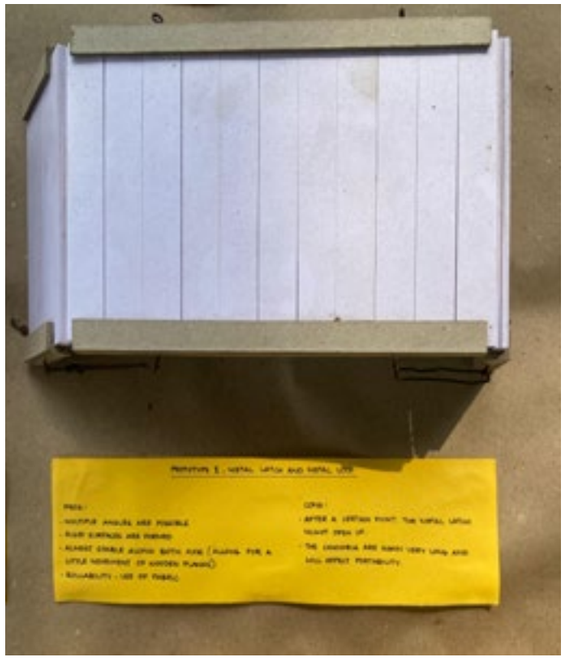
JOINERY

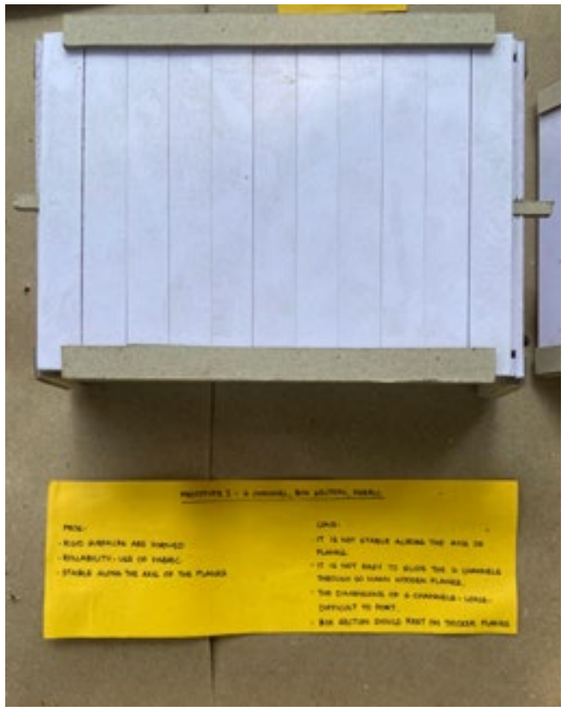
We endeavored to conceptualize the joinery that would best complement our design. Our focus was on determining the most effective method for connecting the planks, evaluating which approach would yield the highest efficiency and functionality.

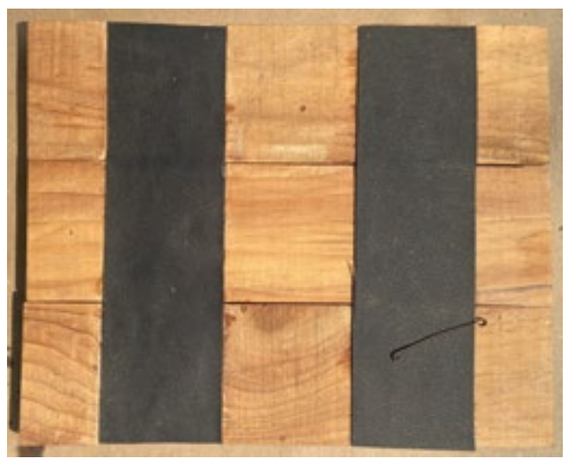


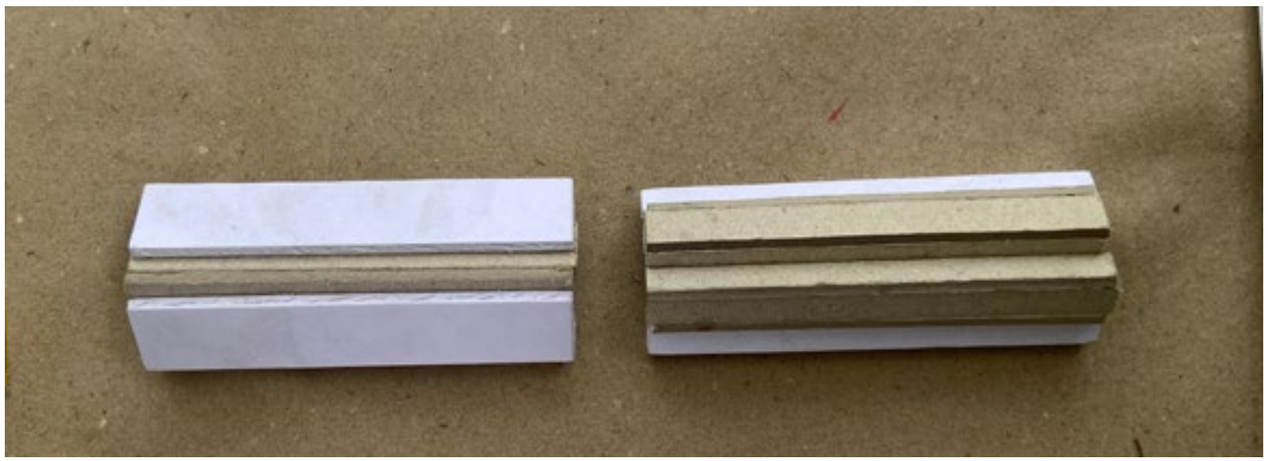








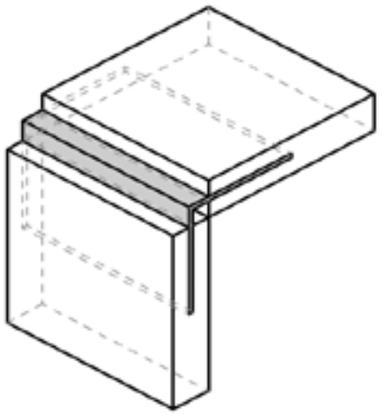




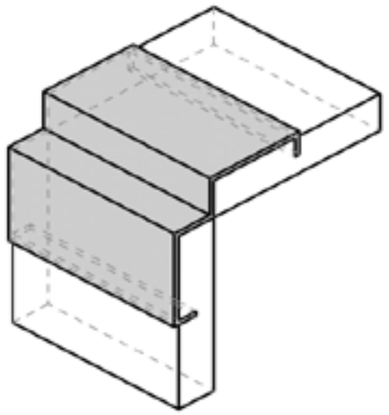
SCALING UP TO

1:1 SCALE

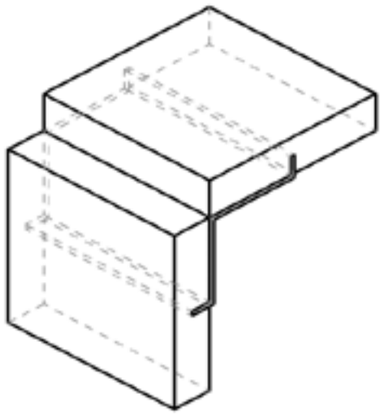
We identified several promising joinery techniques that could be effectively adapted to our chosen material. By experimenting with various sizes and combinations of materials and hardware, we aimed to discern which configurations offered the optimal performance.



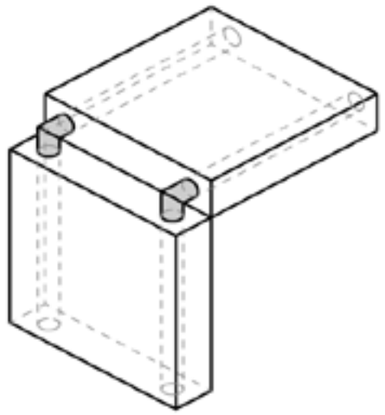
SIMPLE L
PRO- EASY FABRICATION, HIDDEN JOINERY
CONS- STABILITY ISSUES



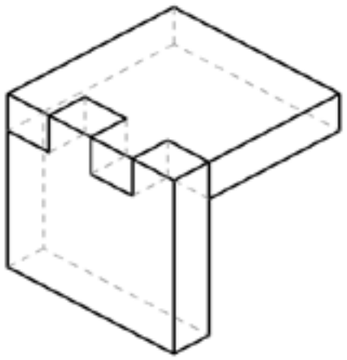
OUTER CLAW
PRO- BETTER STABILITY
CONS- DIFFICULT FABRICATION, EXPOSED JOINERY



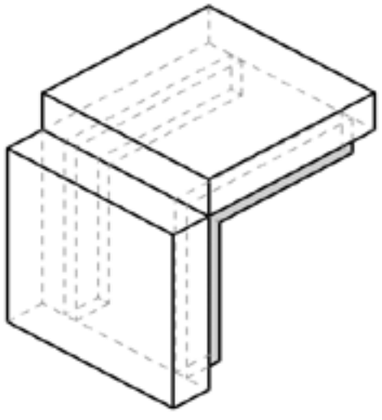
INNER CLAW L
PRO- HIDDEN JOINERY
CONS- DIFFICULT FABRICATION, TORQUE INSTABILITY



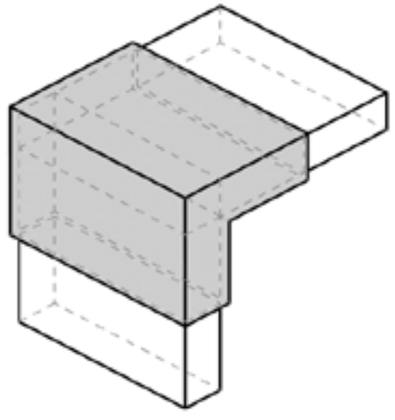
ROD INSERTS
PRO- HIDDEN JOINERY, STABILITY
CONS- COMPRAMISES ROLLABILITY & ASSEMBLY



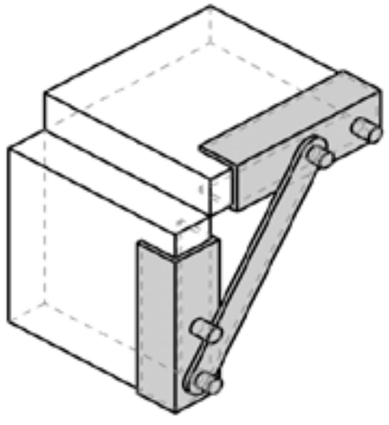
WOODEN JOINT
PRO- SEAMLESS< STABLE
CONS- WEAR & TEAR< PERCISION FABRICATION



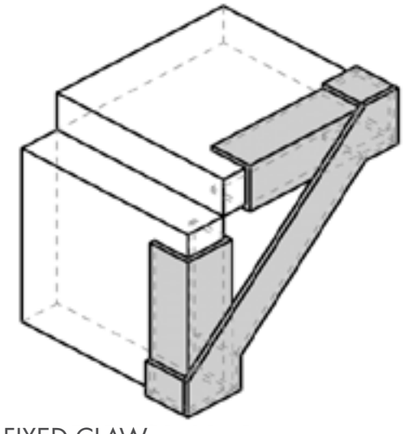
EXTERNAL RIB
PRO- EASY FABRICATION, HIDDEN JOINERY
CONS- PORTABLITY ISSUES



CLOSED L
PRO- EXTREMELY STABLE
CONS- DIFFICULT FABRICATION, EXPOSED JOINERY



ADJUSTABLE BRACKET
PRO- ADJUSTABLE HEIGHT
CONS- DIFFICULT FABRICATION, STABILITY

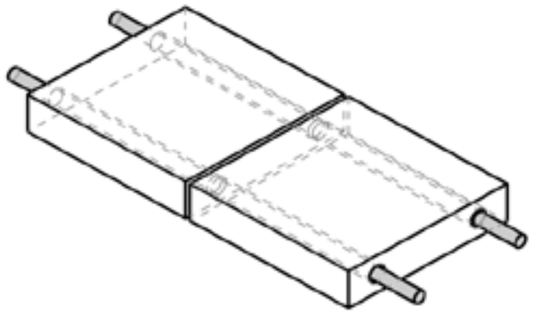


FIXED CLAW
PRO- STURDY, DURABLE
CONS- DIFFICULT FABRICATION

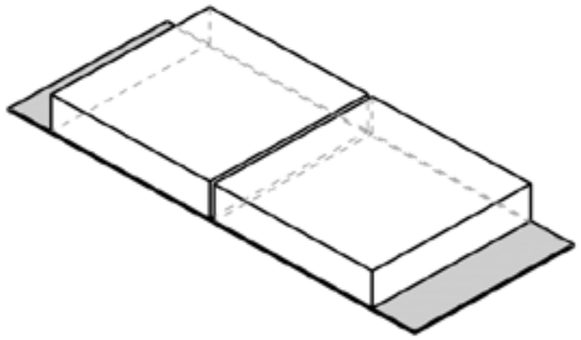
VARIATIONS OF

JOINERY DETAILS

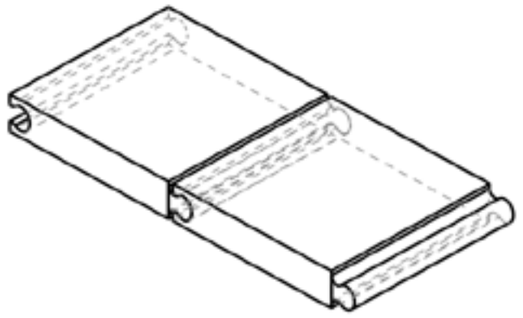
We considered several methods for joining the planks at 90-degree angles, carefully evaluating their respective advantages and disadvantages.



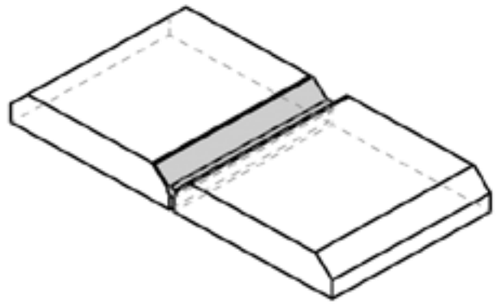
TENSILE CABLES
PRO- LIGHT WEIGHT, EASY INSTALLATION
CONS- STABILITY ISSUES



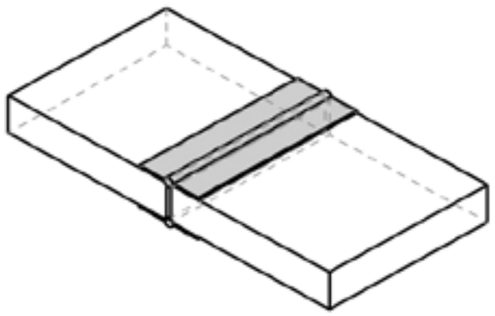
FABRIC BASE
PRO- LIGHT WEIGHT, ADE STABILITY
CONS- MULTI STEP FABRICATION



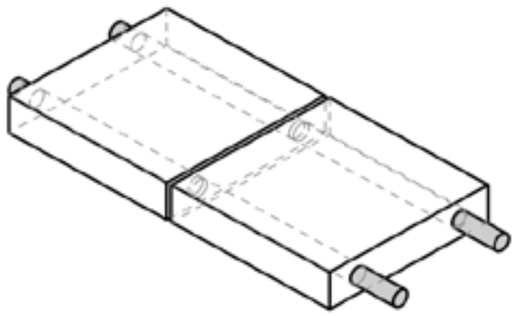
LOCK SLIDE GROOVE
PRO- LIGHT WEIGHT, SEAMLESS, STABLE
CONS- WEAR AND TEAR



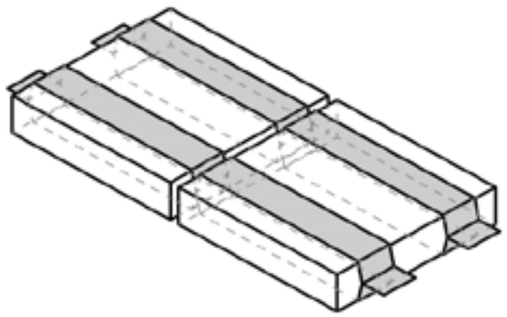
ANGLED HINGE
PRO- EASY ROLLING, ADDED AESTHETIC
CONS- DIFFICULT ATTACHMENT, ADDED HARDWARE



HORIZONTAL HINGE
PRO-EASY ROLLING, ADDED AESTHETIC
CONS- DIFFICULT ATTACHMENT, ADDED HARDWARE



RETRACTABLE RODS
PRO- VERY PORTABLE< STABLE
CONS- DIFFICULT FABRICATION< MAINTENANCE



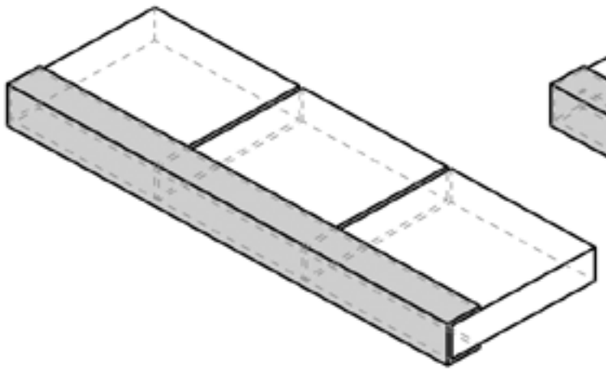
FABRIC STRIPS
PRO- LIGHT WEIGHT, ADDED AESTHETIC
CONS- LOW STABILITY

VARIATIONS OF

JOINERY DETAILS

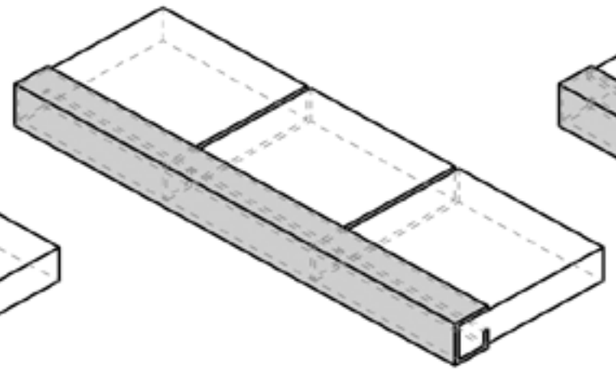
Here, we have deliberated on several methods for attaching the planks, carefully considering the pros and cons of each intervention.

RIGID ATTACHMENT VARIATIONS



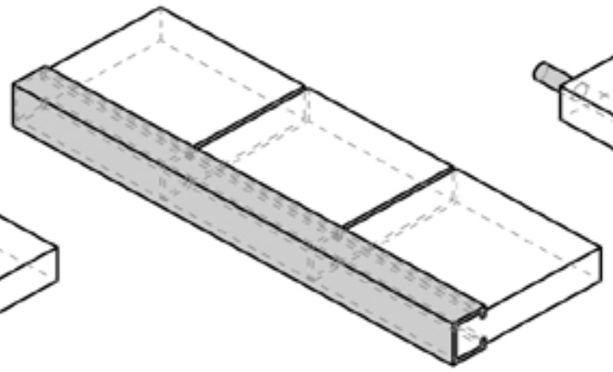
C CHANNEL

Pro - Lightweight, easy installation
Con - Lack of locking

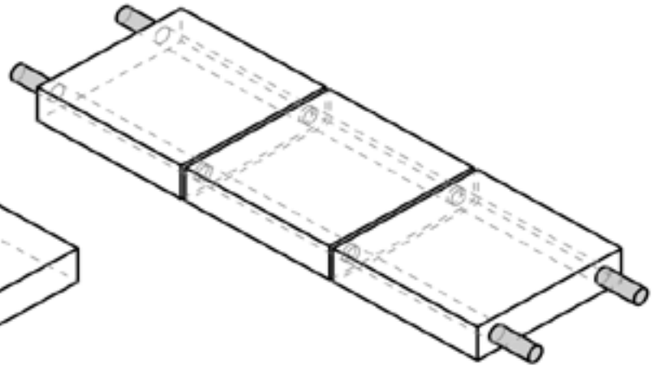


G CHANNEL

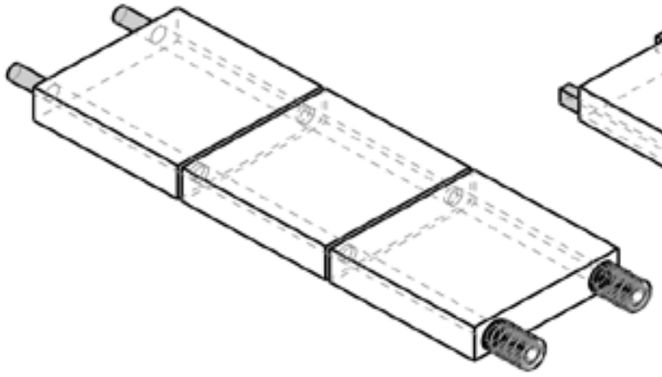
Pro - Lightweight, easy installation, partial locking
Con - Partial locking



CLAWED C CHANEL
PRO- LIGHT WEIGHT, EASY INSTALLATION, EASY LOCKING
CONS- DEEP GROOVING ON WOOD

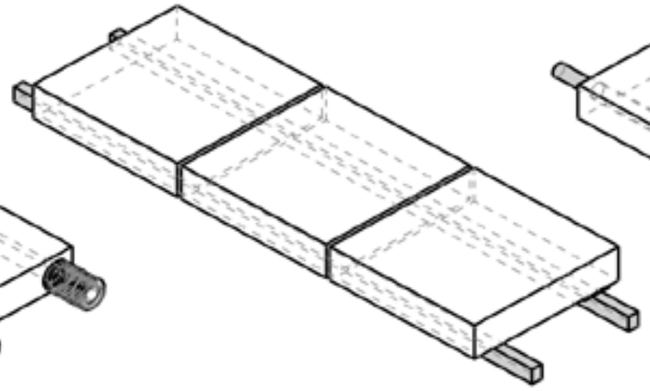


METAL RODS
PRO- EASY INSTALLATION
CONS- CREEP DEVELOPMENT



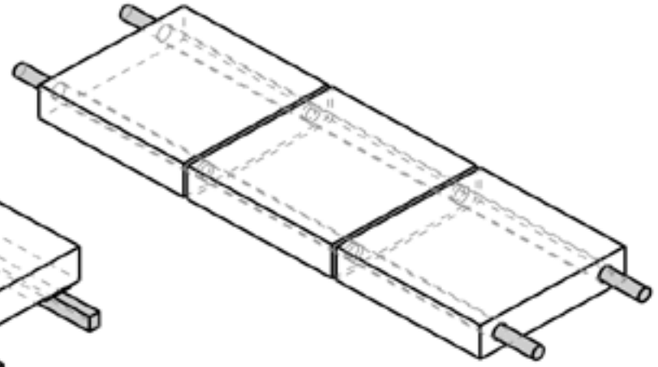
THREADED RODS

Pro - Adjustment (tensile & dimension)
Con - Heavy weight



EXTERNAL FRAME

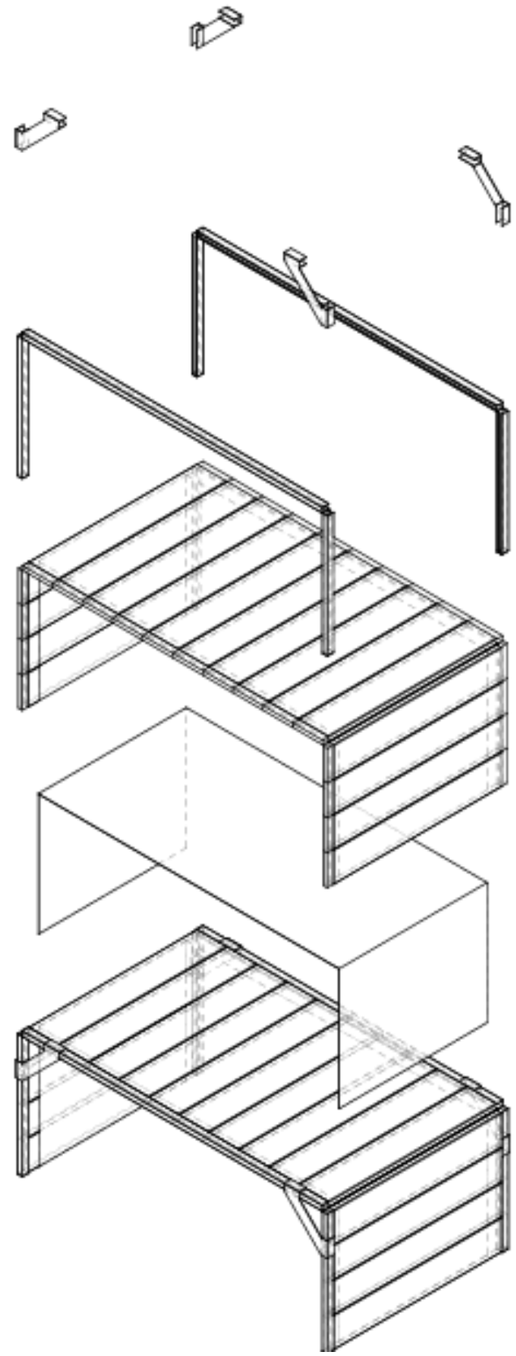
Pro - Hidden frame, easy installation
Con - Reduced rollability



TENSILE CABLE
PRO- LIGHTWEIGHT, AIDS ROLLING
CONS- STABILITY

JOINERY DETAILS

Several interventions regarding the rolling of the planks, along with their respective advantages and disadvantages, were carefully considered.



VISUALISING THE PROTOTYPE

Utilizing 3D visualization tools, we meticulously conceptualized each element and envisioned their integration, ultimately projecting the appearance of the final product.

MAKING THE

PROTOTYPE

The fabrication of a 1:1 prototype provided invaluable insights into the materiality of the project, illuminating the intricate interplay between various materials. Exploring the dimensions, joineries, and technical intricacies during this process added a compelling layer of interest to the endeavor.

THE
PROTOTYPE

The ultimate prototype comprises wooden planks intricately interlocked by C-channels, with canvas affixed to the rear, facilitating the surface's rollability. When positioned at a 90-degree angle, it transforms into a functional table.

ASSEMBLY AND TESTING THE

PROTOTYPE

This video showcases the transformation of the surface into a table, highlighting its versatility as it is effortlessly rolled and transported across terrain.

PRESENTING THE

IDEATION

This presentation emphasized focused ideas, detailing joinery intricacies and finer nuances like texture, weight, health, and wearability. It prioritized transitioning from concept to actual scale to address major issues effectively.

04

THE

FINAL PROTOTYPE

The brief, drawings, details of final prototype have been included for better understanding of the product.

PRODUCT

BRIEF

Introducing ‘the log’, an adaptable and portable workspace solution designed for the rugged terrain of saitoli, uttarakhand. This simple solution tackles the challenges of transporting and setting up workstations.

This multifunctional piece of furniture can transform into a sleeping mat, a chair, a stool, a bench and even a table. Inspired by the local materials and methods of portability for easy adaptation in the humble mountain life. It is constructed with locally sourced wooden planks attached to a strong fabric foundation allowing flexibility of rolling them. They are reinforced with external frames or channels for enhanced stability.

Benefits:
1. Portable - lightweight, and rolls up compactly for easy transport and storage, reduces strain and is convenient
2. Durable - made with good-quality materials to ensure long lasting use
3. User friendly - quick and easy assembly

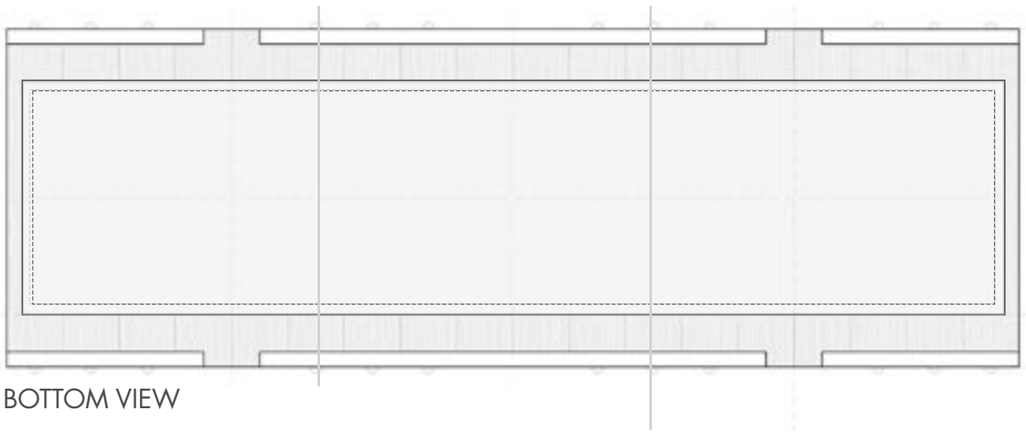
THE LOG FOR

लोग

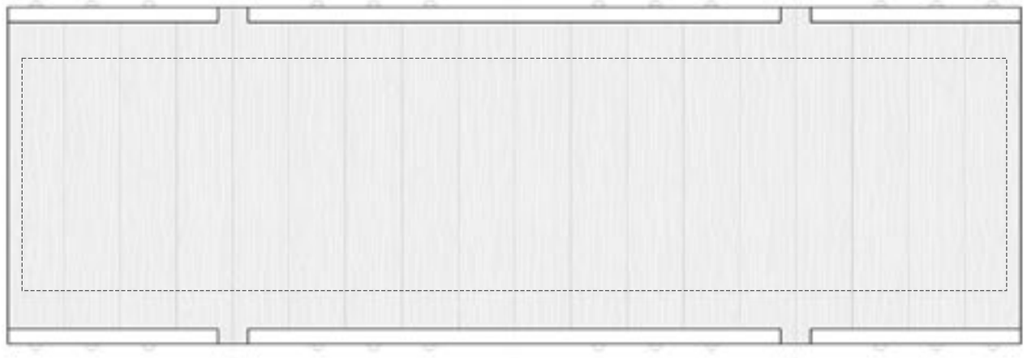
SECTION AA'

FRONT ELEVATION

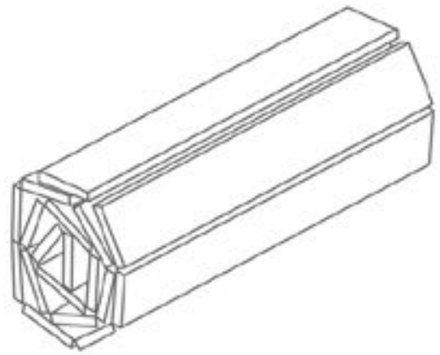
SECTION BB'

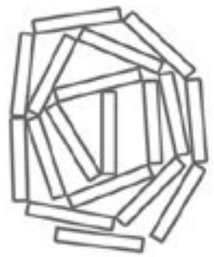


BOTTOM VIEW

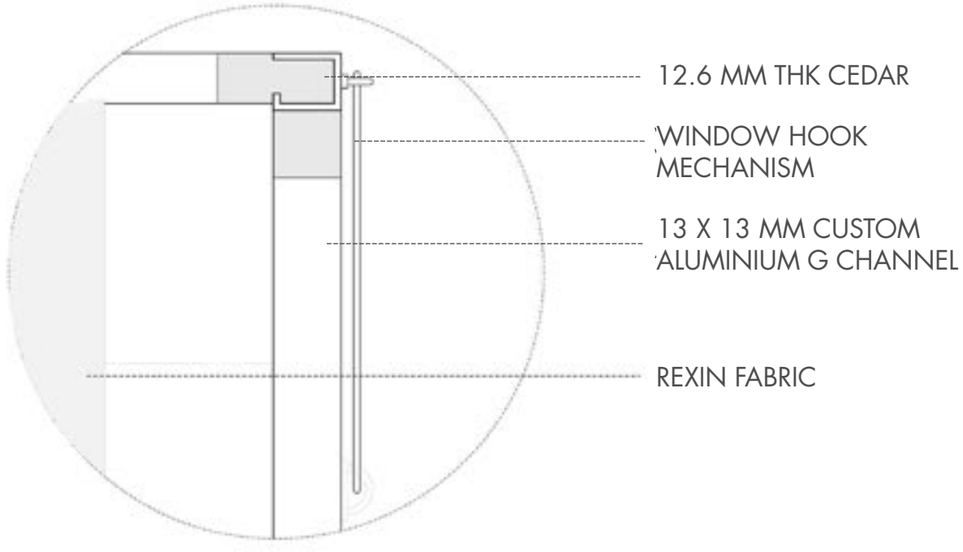


TOP VIEW



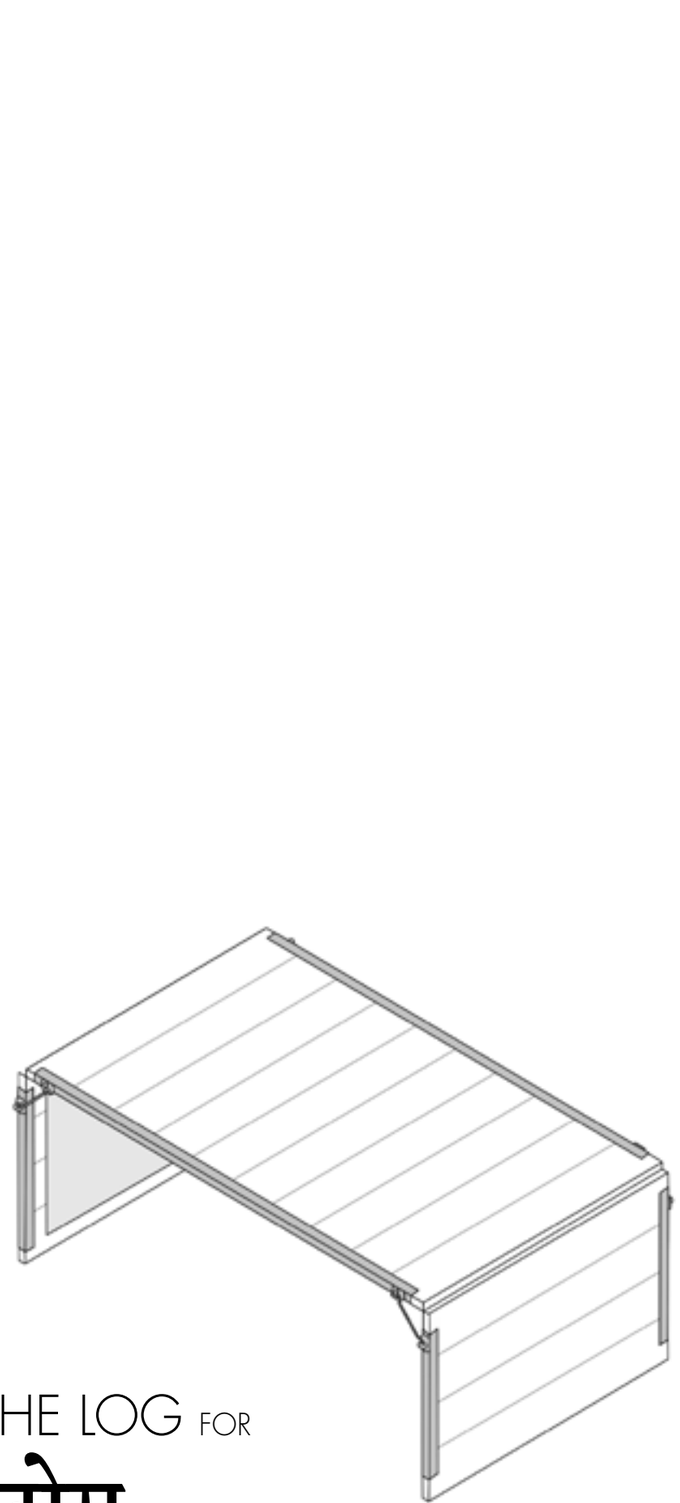


DIAMETER AFTER ROLLING = 200MM
LENGTH OF THE ROLL = 450MM
WEIGHT OF THE ROLL = 5.6KG



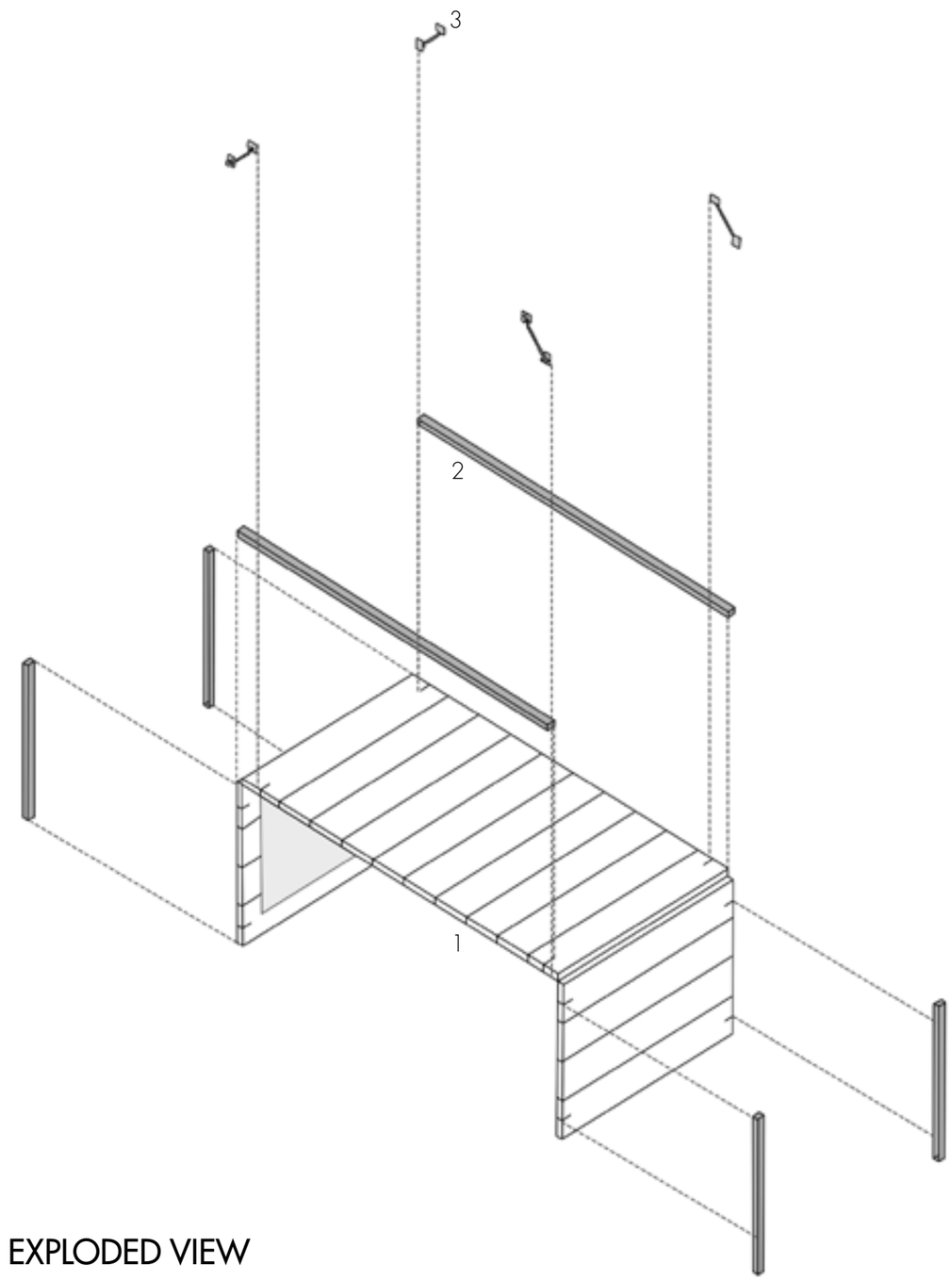
DETAIL A

THE
FINAL DRAWINGS



THE LOG FOR

लोग



EXPLODED VIEW

PARTS

1. WOODEN MAT

ROLLABLE PLANKS JOINED BY FABRIC THAT CAN DRAPE OVER ANYTHING TO CREATE A SMOOTH SURFACE.

2. CHANNELS

C SHAPED CHANNELS THAT CLAMP ONTO THE MAT FOR STABILITY, FEATURING HOOKS FOR ADJUSTING LEG ANGLES AND HEIGHTS.

3. LATCH

SECURES THE TABLE ANGLE BY LOCKING ONTO THE SIDE HOOKS, ENURING A STABLE, SHAKE FREE SURFACE AND STAND.

(पार्ट्स)

1. लकड़ी की चटाई

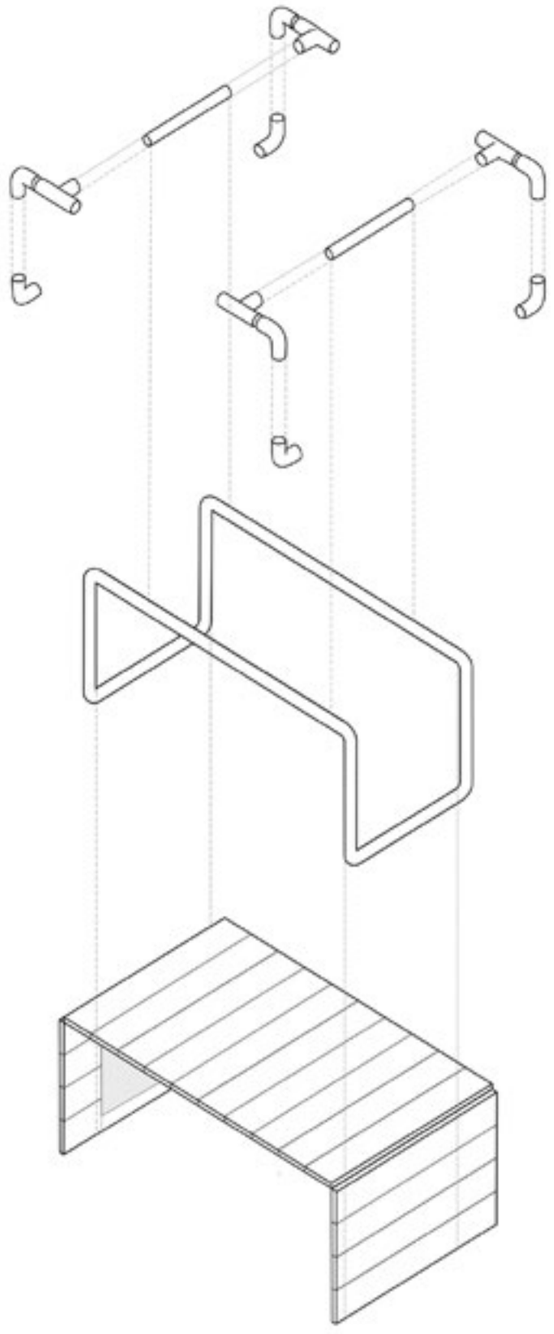
कपड़े से जुड़े रोल-योग्य तख़्त जो किसी भी चीज़ पर लपेटकर एक चिकनी सतह बना सकते है।

2. चैनल

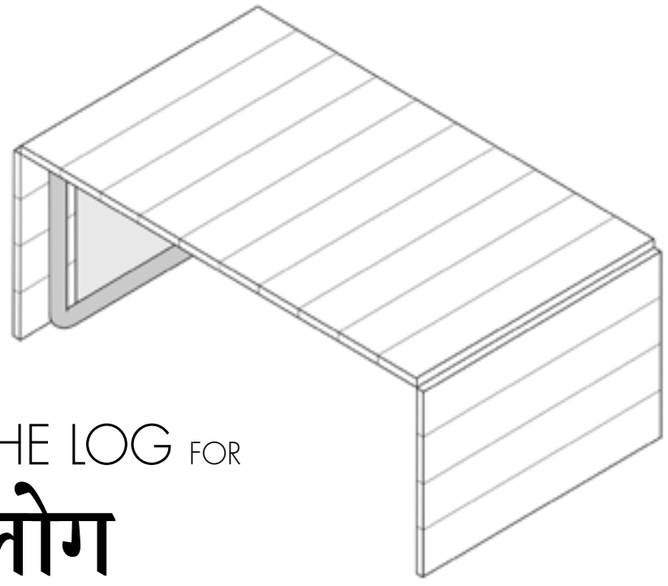
सी-आकार के चैनल जो सथिरता के लिए चटाई पर चपिकते है, जसिमें पैर के कोण और ऊंचाई को समायोजति करने के लिए हुक होते है।

3. कुंडी

साइड हुक पर लॉक करके टेबल के कोण को सुरक्षति करता है, ए`क सथिरि, शेक मुक्त सतह और सटैड सुनशि्चति करता है।



EXPLODED VIEW



THE LOG FOR

लोग

PARTS

1. WOODEN MAT

ROLLABLE PLANKS JOINED BY FABRIC THAT CAN DRAPE OVER ANYTHING TO CREATE A SMOOTH SURFACE.

2. PIPES

ALUMINIUM PIPES WILL CONNECT TO FORM A FRAMEWORK OF THE TABLE ONTO WHICH THE MAT WILL ROLL.

3. CONNECTORS

ALUMINIUM CONNECTORS WILL CONNECT THE PIPES TOGETHER TO FORM A TIGHT SECURE FIT ENSURING A STABLE BASE.

(पार्ट्स)

1. लकड़ी की चटाई

कपड़े से जुड़े रोल-योग्य तख़्त जो किसी भी चीज़ पर लपेटकर एक चिकनी सतह बना सकते है।

2. पाइप

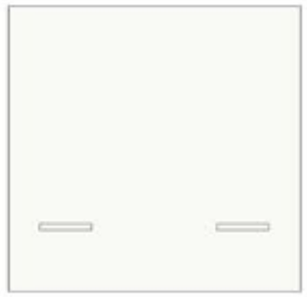
एल्युमीनियम के पाइप जुड़कर मेज का ढाँचा बनाएंगे जिस पर चटाई लुढ़केगी।

3. कनेक्टर्स

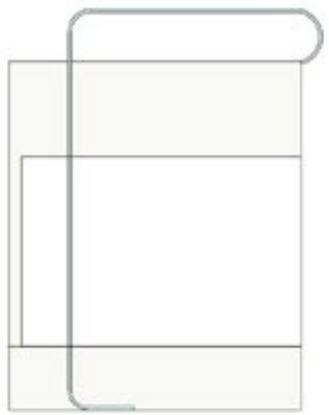
एल्यूमनियिम कनेक्टर एक स्थरि आधार सुनश्चिति करने के लिए एक तंग सुरक्षति फटि बनाने के लिए पाइपों को एक साथ जोड़ देंगे।

VEGAN LEATHER/
KHACHHAR KA PATTA

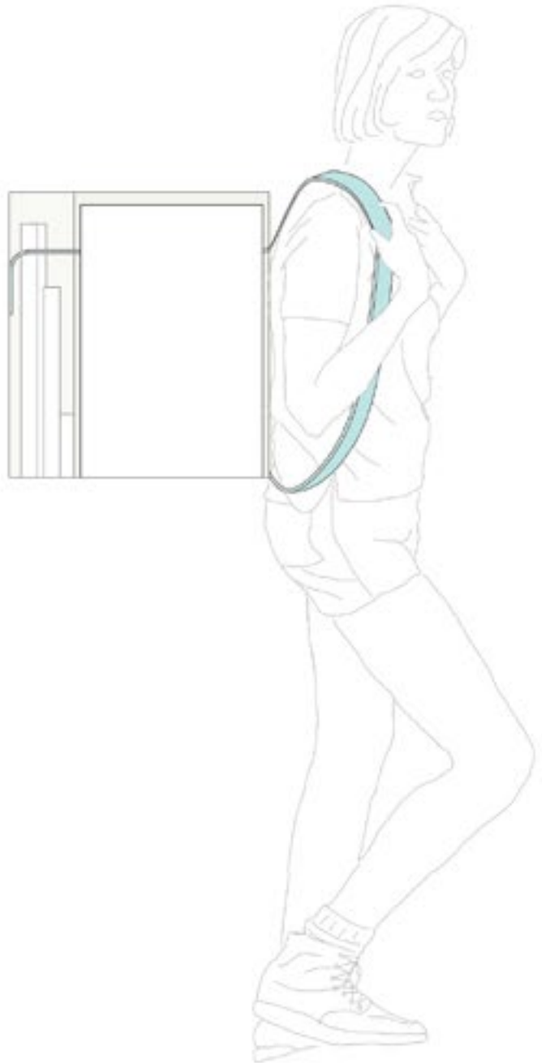
CANVAS WITH
WATERPROOFING



PLAN VIEW



SECTION AS SHELF



SECTION AS BAGPACK

AXONOMETRIC OF BAGPACK

Bagpack acts as an additional feature of the log table, which converts itself to the shelf, once the table is setup.

ABOUT THE

FACULTY

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