

15 YEARS OF BAMBOO STORIES



ROOFING SOLUTIONS • 2024
BAMBOO CONSTRUCTION ENGINEERING

ROOFING SOLUTIONS

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NATURAL SOLUTIONS

ALANG ALANG *Traditional thatch*

Alang-alang has been used for centuries as a traditional system for roofing in Bali and Indonesia. It enables to build natural, eco-friendly roofs with high insulation properties. Its organic appearance enables alang-alang to be set without interior coverage.

PERKS

- + Best Quality/Price rate
- + No need interior coverage
- + Possible knock-down

DRAWBACKS

- Required minimum roof inclination



Alang alang roofing – Mutia Garden – Medan, Indonesia, 2019.

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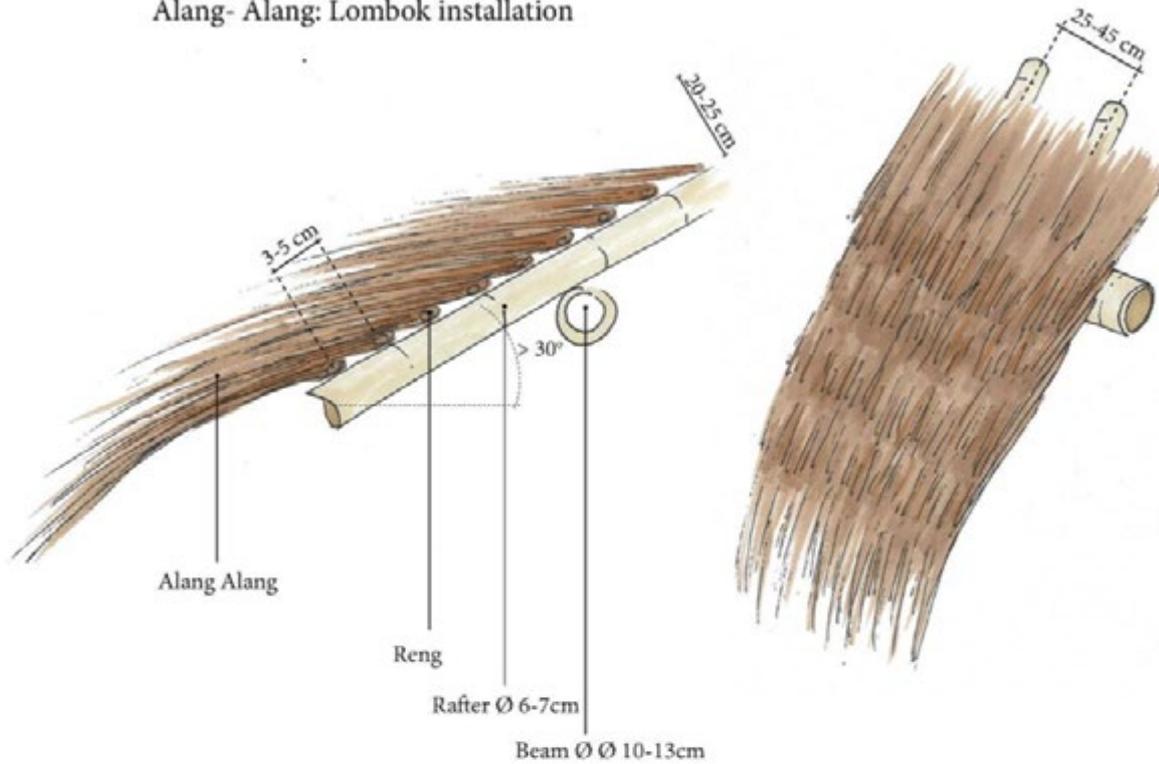
TECHNICAL DATA:

Lifespan: 10-15 years

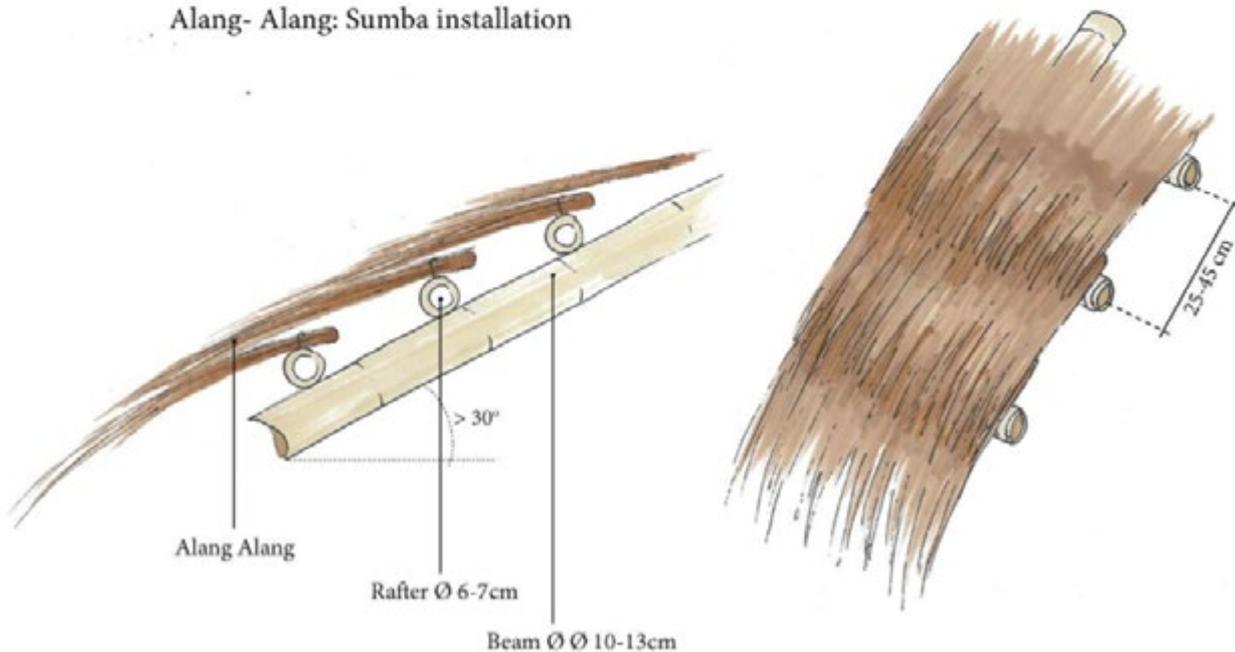
Number of layers: 27-33pcs/m

Installation time: 3m²/day/pers

Alang- Alang: Lombok installation



Alang- Alang: Sumba installation



BAMBOO BELAH BOLAK BALIK *Half bamboo*

Bamboo belah bolak balik is a traditional solution for roofing, it confer ecologic and aesthetic roofing to the buildings. Organic curved roofing is not recommended for this roofing solution.

PERKS

- + Cost effective
- + Traditional roofing technique
- + Natural material

DRAWBACKS

- Reduced lasting



Detail Bamboo belah bolak balik roofing.



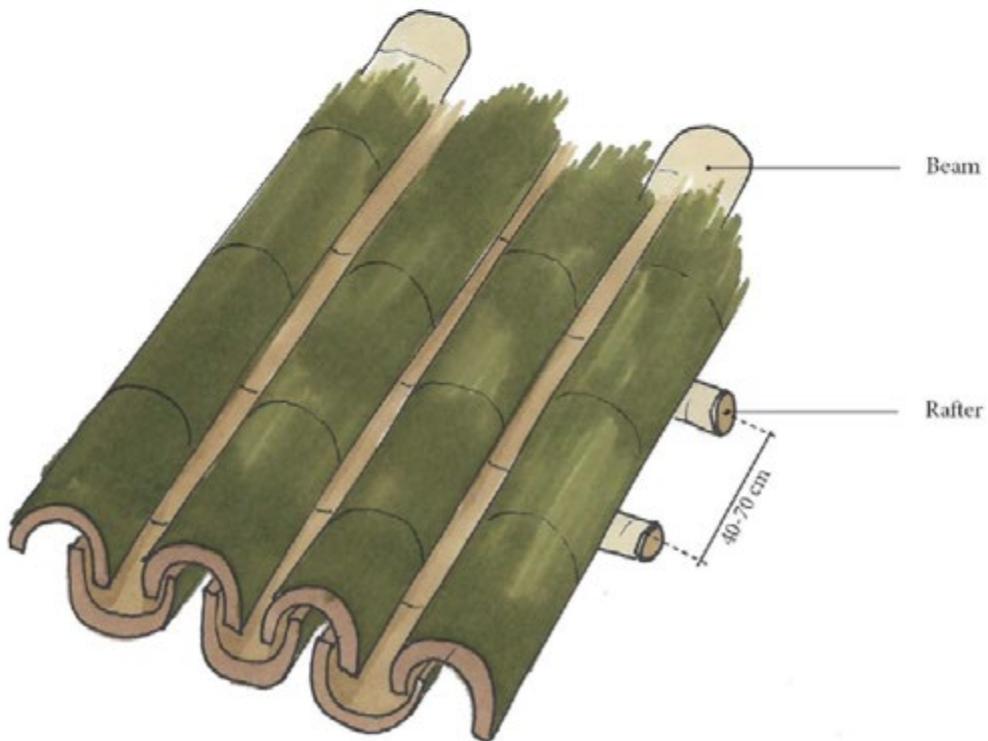
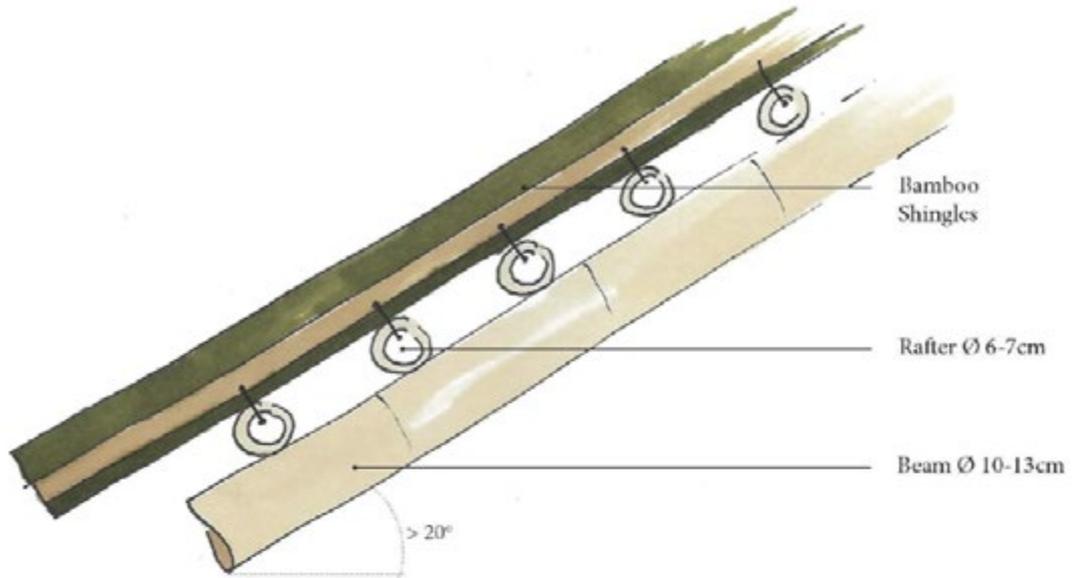
Traditional roofing bamboo belah bolak balik.

TECHNICAL DATA:

Lifespan: 5-10 years

Number of layers: 17pcs/m

Installation time: 4m²/day/pers.



BAMBOO SHINGLES

Bamboo shingles are the most aesthetic roofing. Each shingle made by hand one by one confer a unique style and temper to the building. On the other hand, its long making and installation process don't make bamboo shingles a cheap solution.

PERKS

- + Unique rendering
- + Traditional roofing technique
- + Sustainable material
- + Material locally sourced

DRAWBACKS

- Installation time



Bamboo Shingles roofing – Suarga Padang Padang, Bali.

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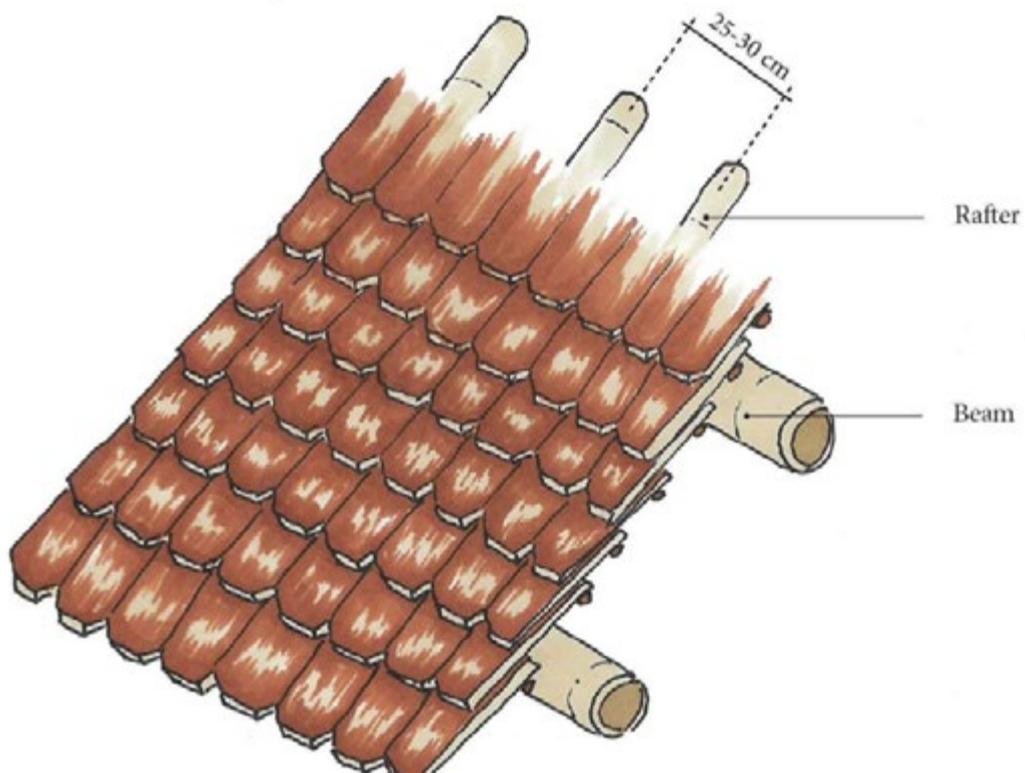
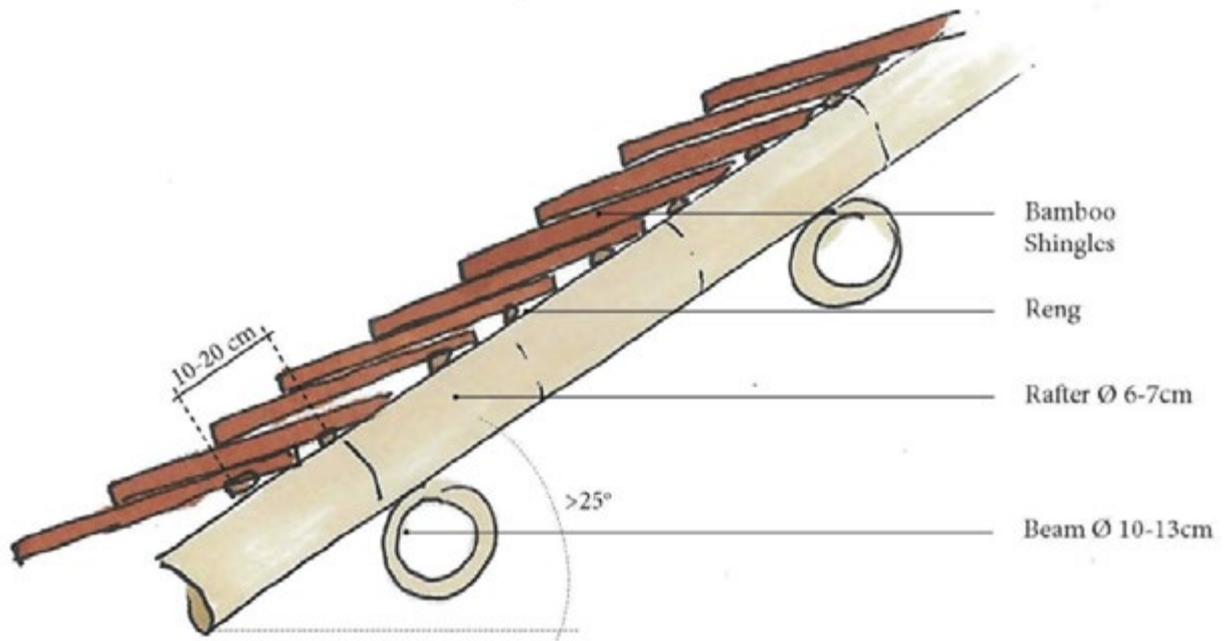
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TECHNICAL DATA:

Lifespan: 10-15 years

Number of layers: 5-7pcs/m

Installation time: 1m²/day/pers.



COCONUT LEAVES

Coconut leaves are a good solution. When possible it is sourced locally and contributes to the local economy. It optimizes the logistic in remote areas.

PERKS

- + Cost effective
- + Ecological roofing
- + Material locally sourced

DRAWBACKS

- Limited lifespan



Coconuts leaves roofing on gazebo, Tejakula, Bali, 2018.



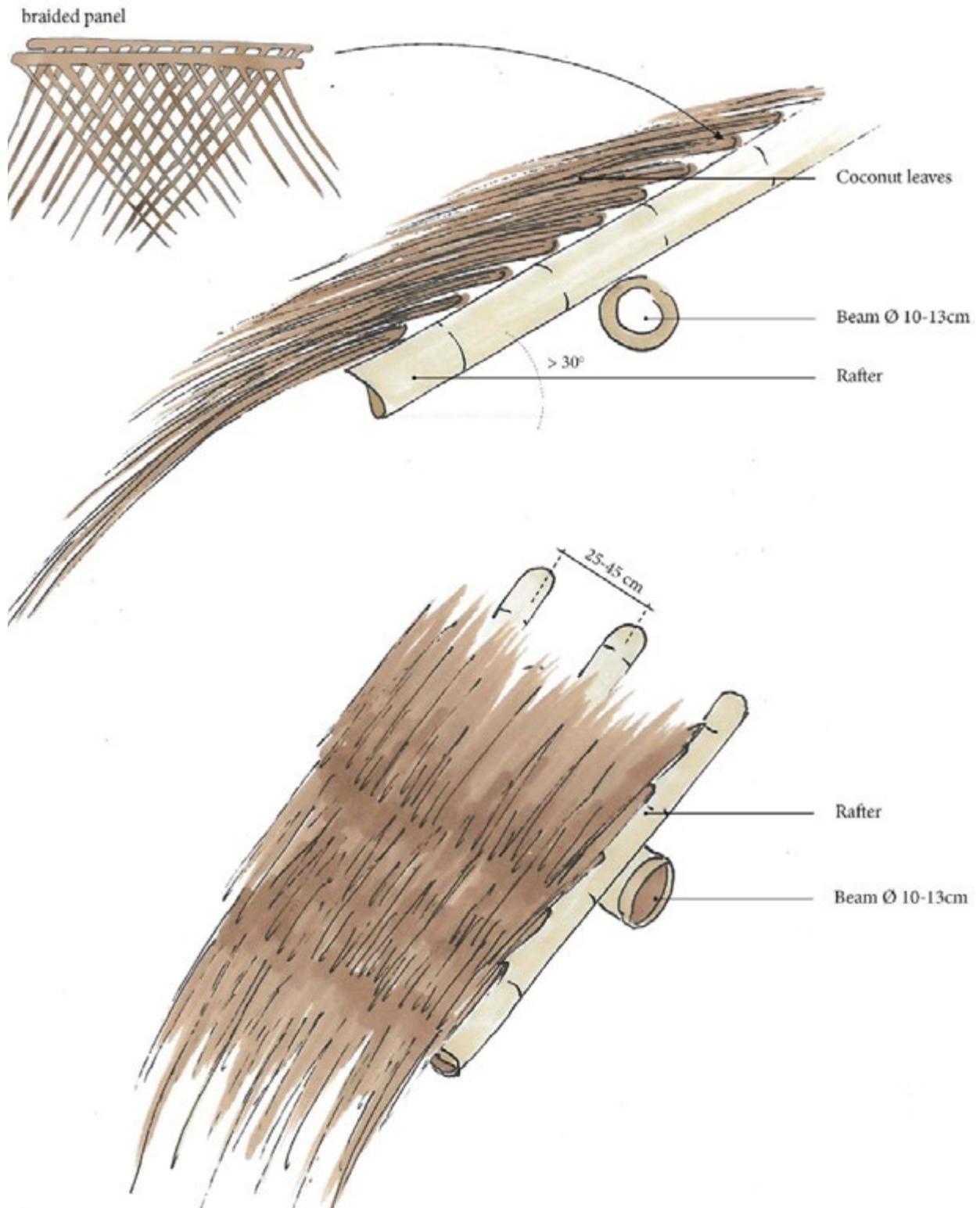
Coconut leaves roofing - Whales & Waves, Restaurant - Sumbawa, 2015.

TECHNICAL DATA:

Lifespan: 5-10 years

Number of layers: 18-25pcs/m

Installation time: 3-4m²/day/pers.



GREEN ROOF

Green roofing offers a natural aesthetic and integration in its environment contributing to the good insulation of the building. We can also extend the surface of the building by using green roof. The bamboo structure has to be sized in adequation with the project to ensure stiffness and durability.

PERKS

- + Long lasting
- + Ecological roofing
- + Optimize building spaces + Optimize insulation.

DRAWBACKS

- Increase bamboo sections



Green roof on bamboo structure – Orang Utan Heaven, Veterinary clinic – Sumatra, Indonesia. 2019.



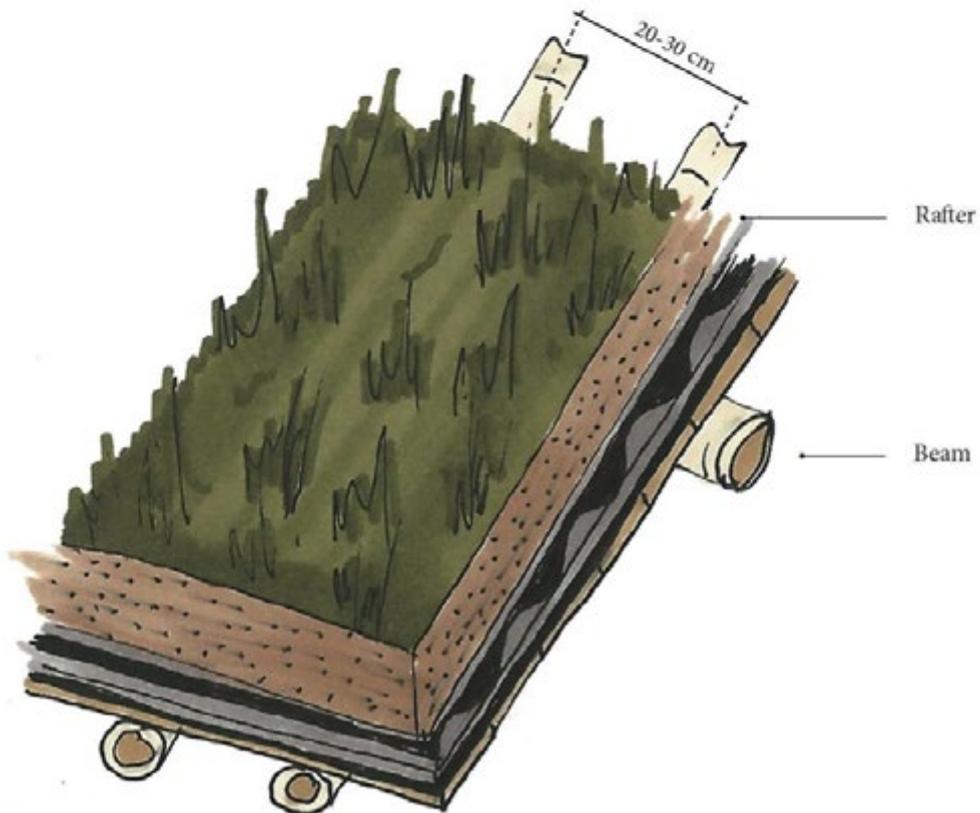
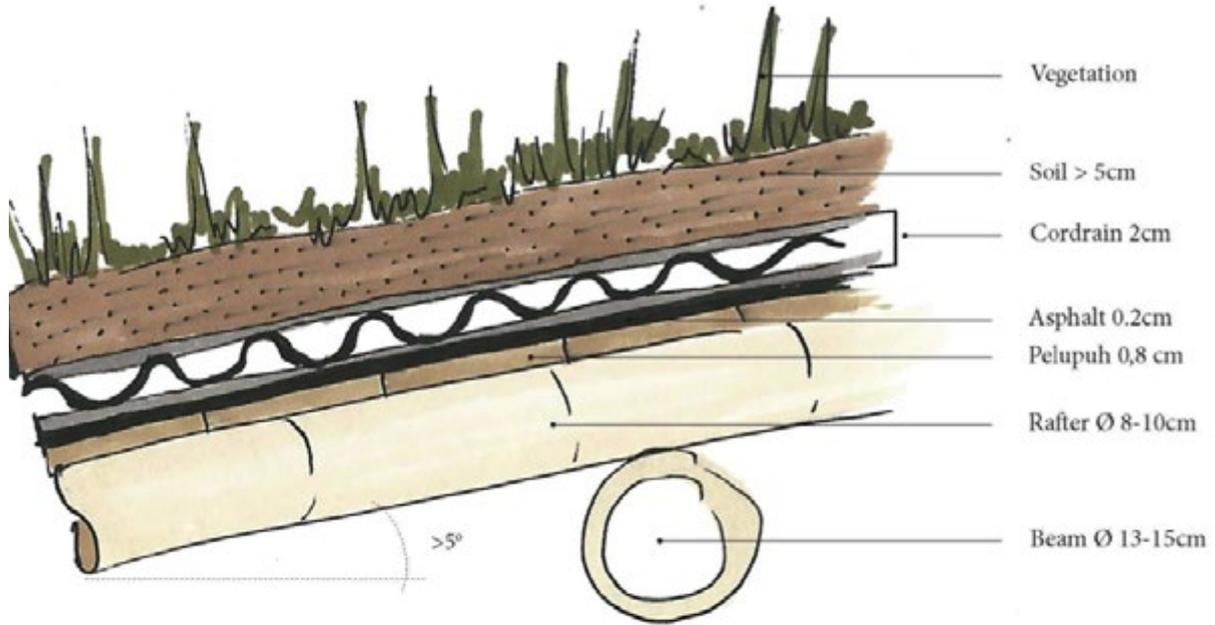
Green roof on bamboo structure – INBAR – Beijing, China. 2019.

TECHNICAL DATA:

Lifespan: 20-30 years

Number of layers: 1pcs/m

Installation time: 2m²/day/pers.



IJUK Palm fibers

Ijuk is the most resistant and natural material for roofing. Made out of palm tree fibers, this material is extremely resistant. It is locally used in most Indonesia and offer a really sustainable solution. Traditionally used for Bali temples, local authorization from the village would be needed.

PERKS

- + Long lasting
- + Ecological roofing
- + No need interior coverage

DRAWBACKS

- Required local authorization



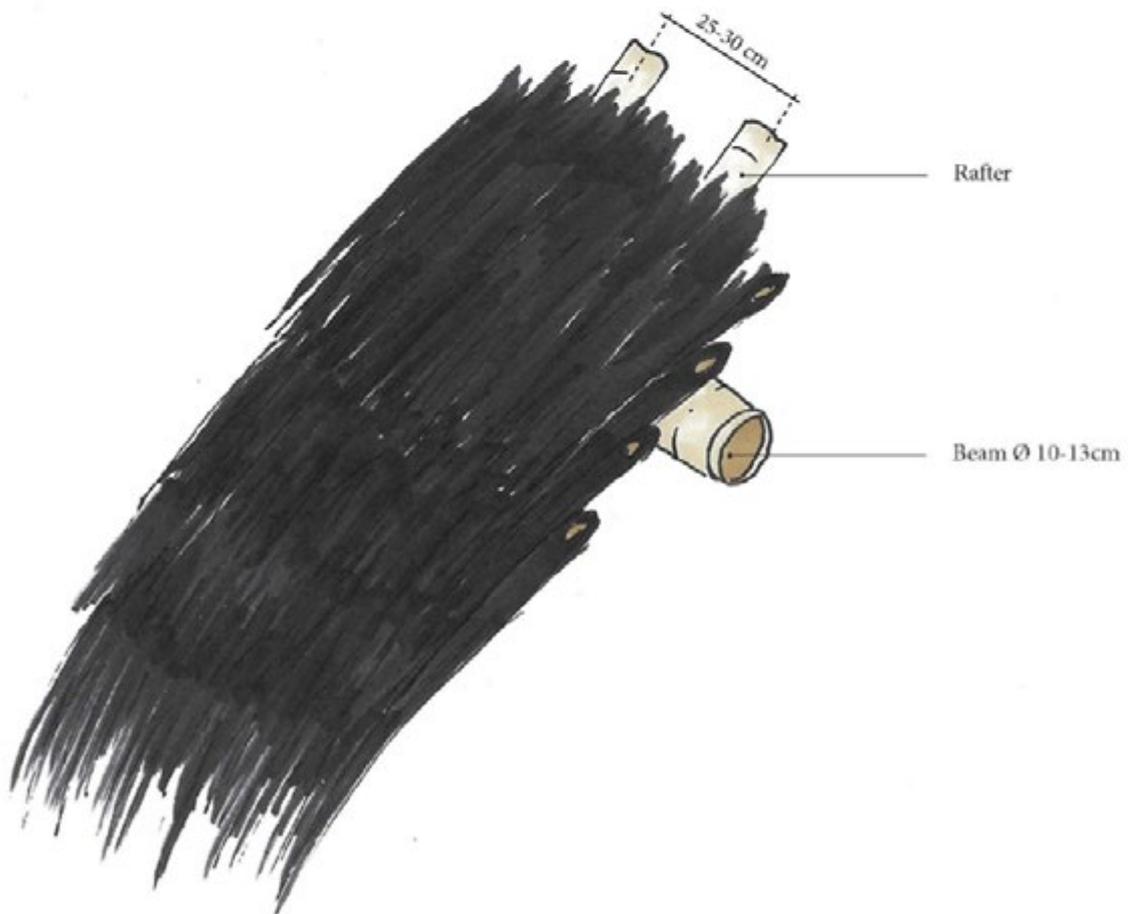
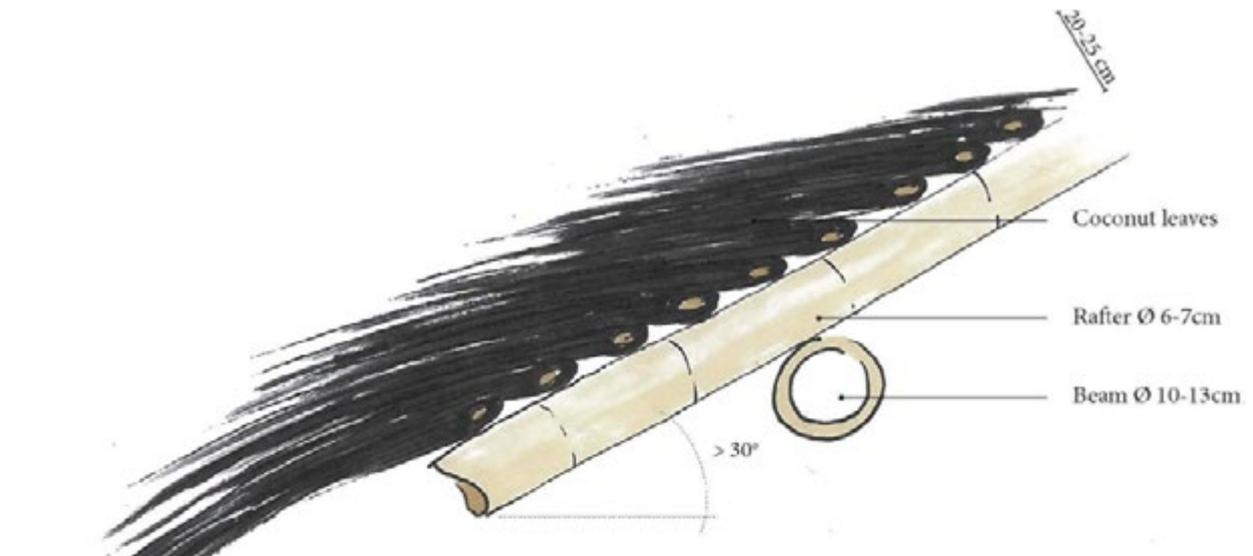
Ijuk roofing - Ekommunity Farmstay & Yoga, Office - Munduk, Bali, 2018.

TECHNICAL DATA:

Lifespan: 30-50 years

Number of layers: 18-25 pcs/m

Installation time: 3m²/day/pers.



PELUPUH *Open Bamboo*

Pelupuh is a natural material used traditionally in Indonesia for roofing and walls. The layers of pelupuh are made with the top part of the bamboo poles used for the structure (15-25m), resulting with a cost and resource effective solution. It is the best balance for price, durability and natural rendering allowing natural organic roof shape with flexible roof inclination. It is also the most recommended to maximize logistic for remote areas projects.

PERKS

- + Most adapted material for organic shapes
- + Reduced roof inclination
- + Change top layer only after 10-15 years
- + Sustainable roofing solution



Pelupuh roofing on construction - K Club Ubud, Lobby - Tegallalang, Bali. 2019.

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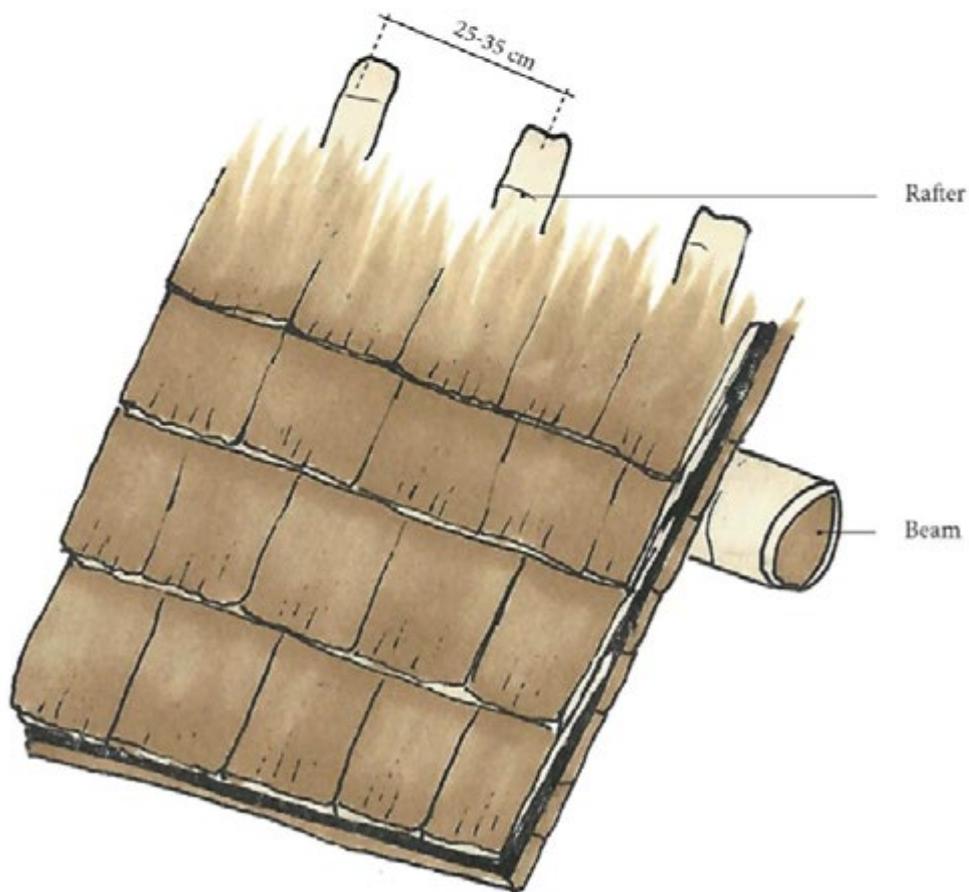
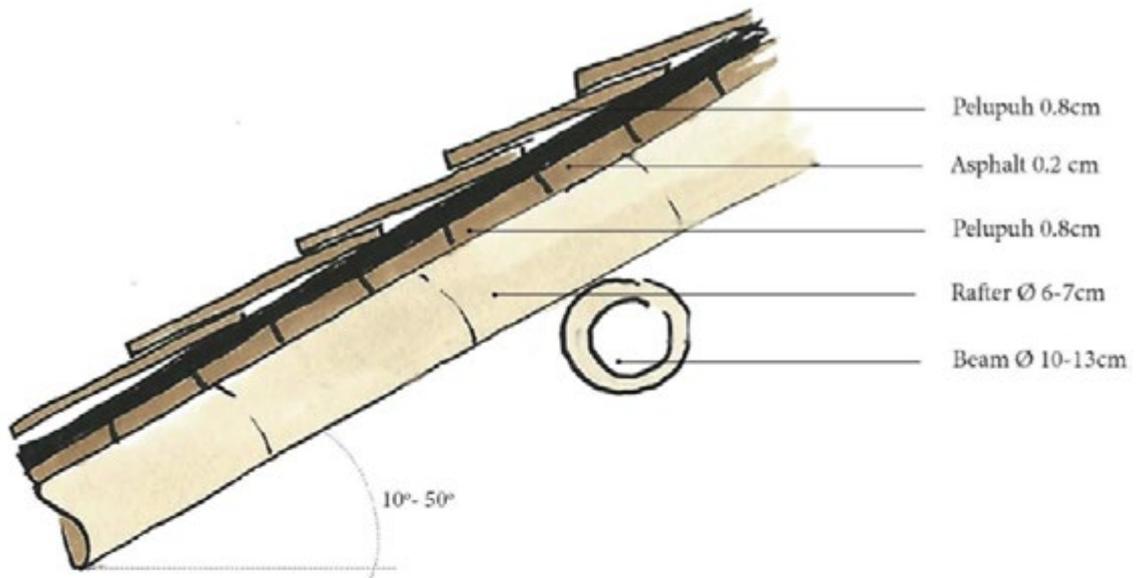
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TECHNICAL DATA:

Lifespan: 10-15 years

Number of layers: 2x10pcs/m

Installation time: 2m²/day/pers.



SIRAP ULIN *Iron wood tiles*

Sirap ulin is a natural solution for roofing used in traditional houses made out of fresh Iron wood from wild forest. It is one of the most durable solutions with Ijuk roofing. Two types of rendering are possible in spike shape or straight shape.

PERKS

- + Elegant rendering
- + Traditional roofing technique + Natural material
- + Long lasting

DRAWBACKS

- From natural forest



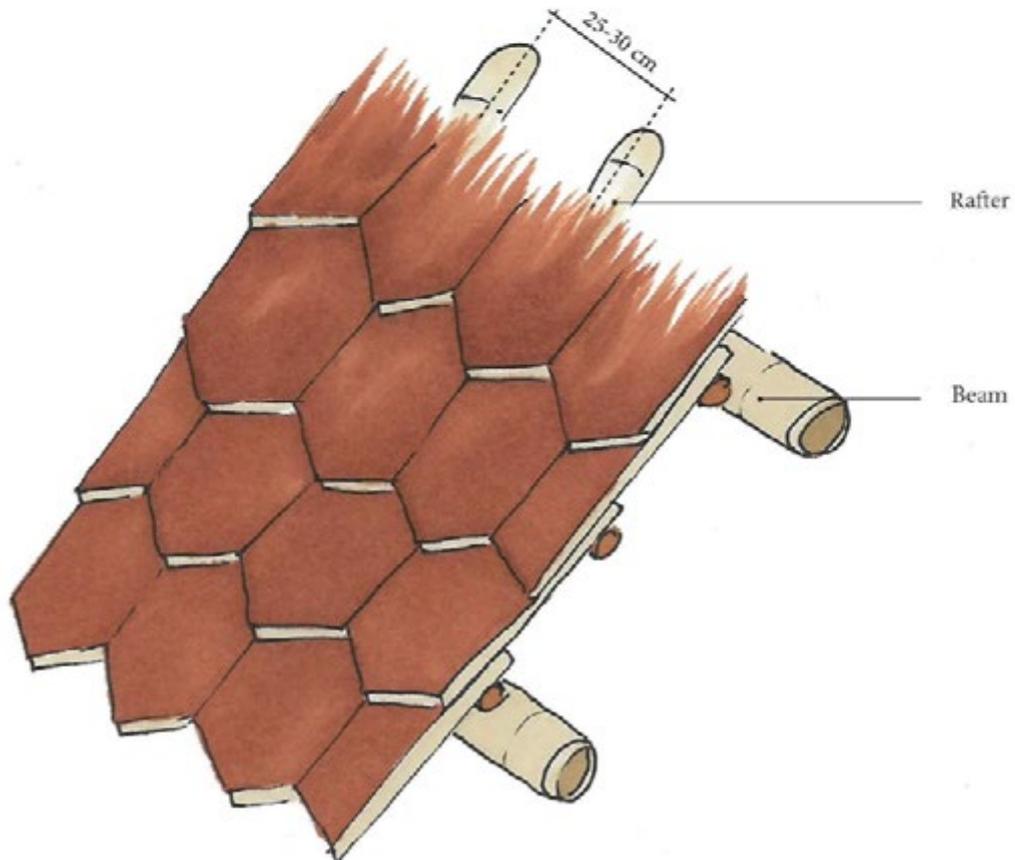
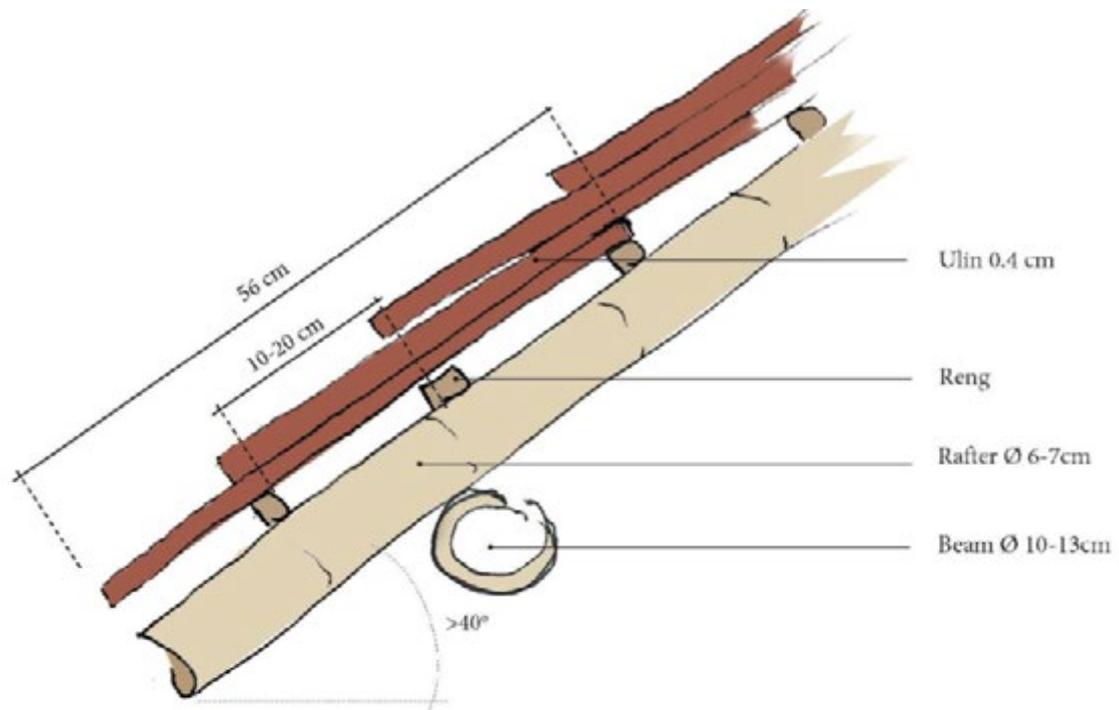
Sirap Ulin roof – Seven Chakra, Yoga – Kerobokan, Bali. 2019.

TECHNICAL DATA:

Lifespan: 15-20 years

Number of layers: 5pcs/m

Installation time: 2m²/day/pers.



MANUFACTURED SOLUTIONS

CERAMIC TILES

Ceramic tiles, made out of clay, offer a natural and traditional material. If properly installed it will ensure durability and waterproofing to the bamboo structure.

PERKS

- + Natural material
- + Traditional roofing
- + Long lasting

DRAWBACKS

- Not well adapted for too organic curved roof



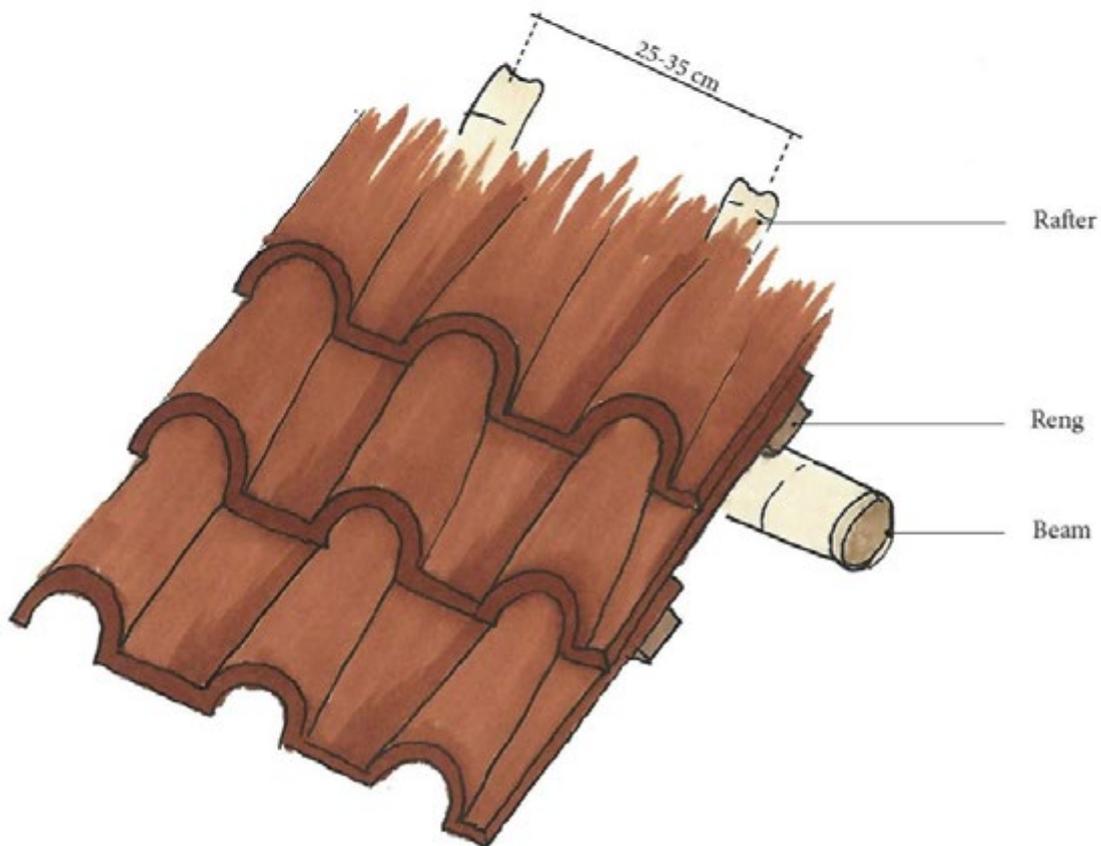
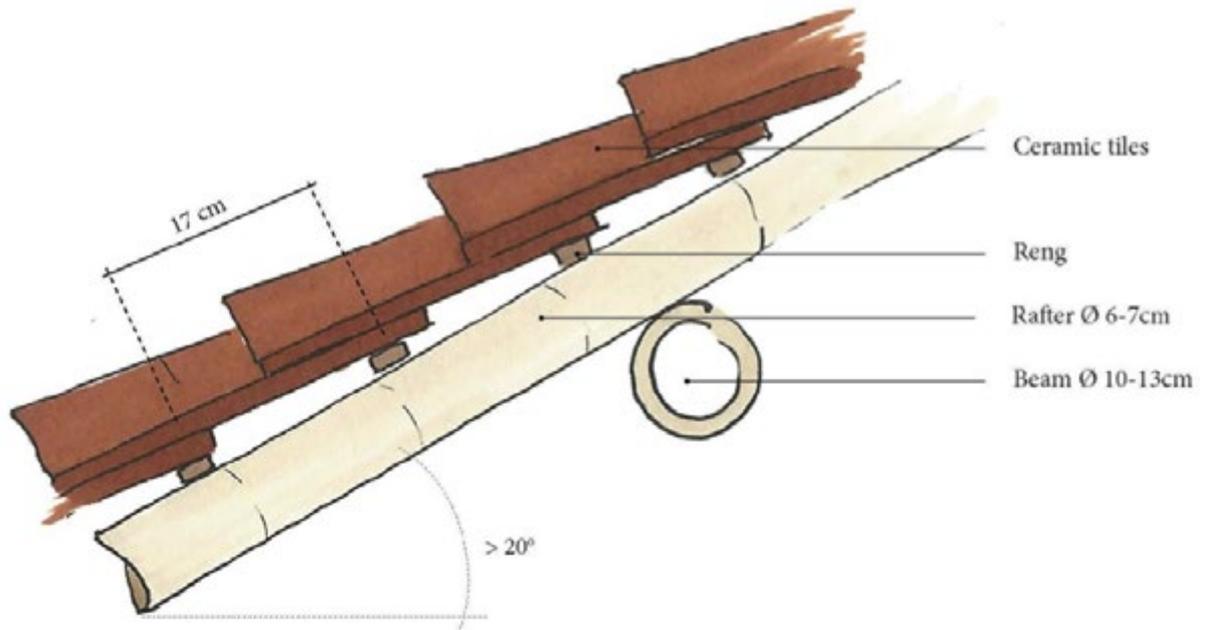
Ceramic tiles – Meditation center, yoga shala – Sangketan, Bali. 2019.

TECHNICAL DATA:

Lifespan: 15-25 years

Number of layers: 4pcs/m

Installation time: 4m²/day/Pers.



MULTI ROOF

Metal roofing tiles are new generation of roofing materials. They are used on all types of buildings, both residential and commercial. Lightweight and durable metal roofing can last 20-30 years. They can be coated with high reflectivity coatings to help with energy usage.

PERKS

- + Good Lifespan
- + Fast installation

DRAWBACKS

- Non ecologic



Detail multiroof during installation process.



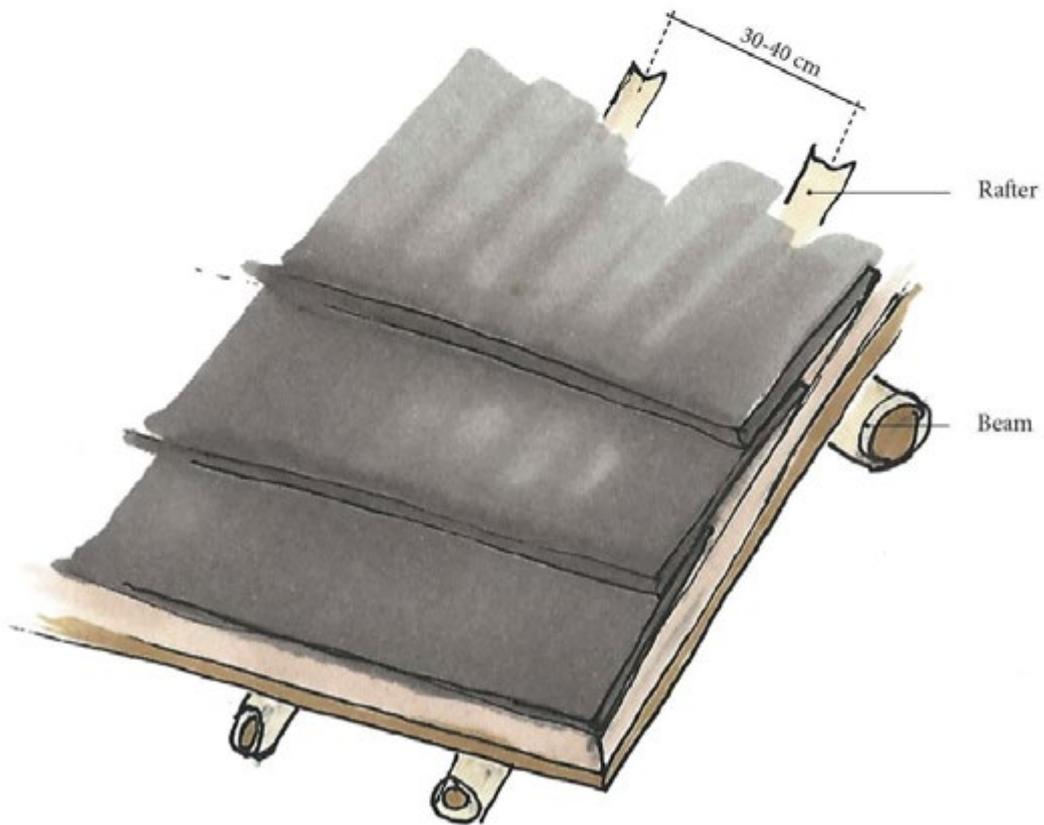
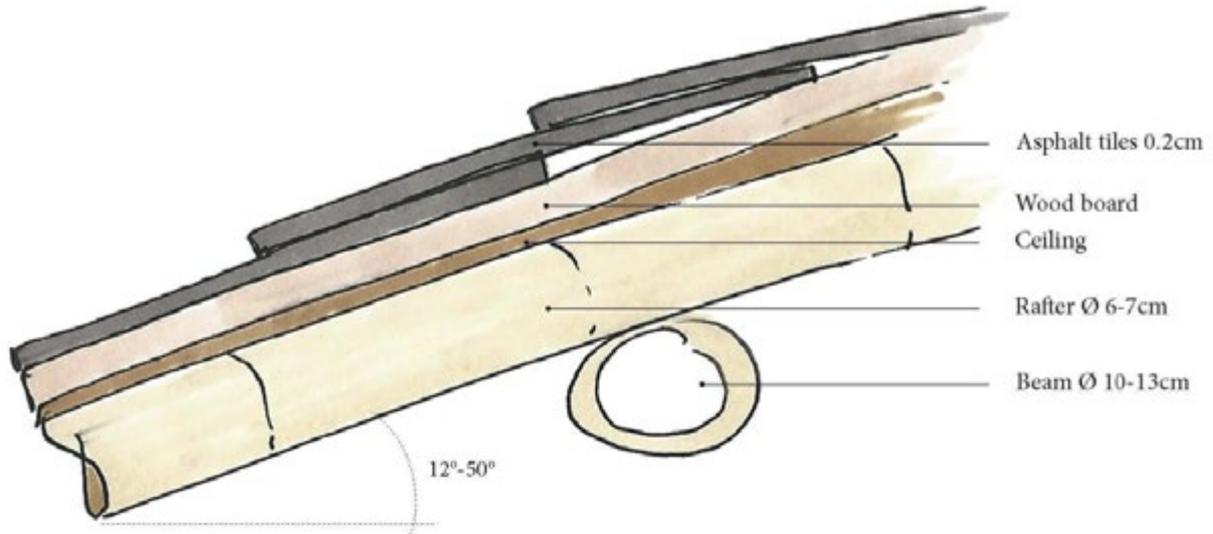
Multiroof roofing - Atelier Alam School - Berawa, Bali, Indonesia. 2016

TECHNICAL DATA:

Lifespan: 15-20 years

Number of layers: 1pcs/m

Installation time: 3m²/day/pers.



MEMBRANE

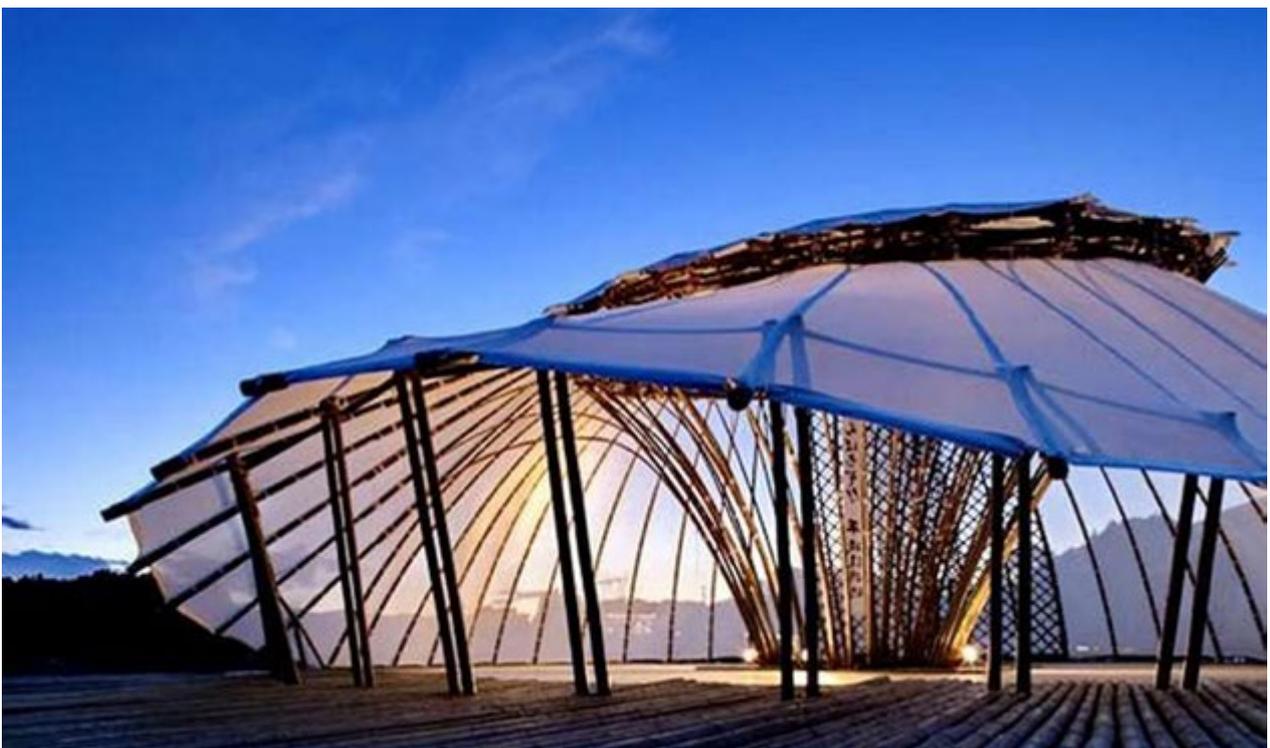
Membrane are aesthetic and can adapt to each original design. For long lasting bamboo structure with membrane roofing, we will look for waterproof quality membrane with metal connections.

PERKS

- + Original design
- + Fast installation



Detail membrane roofing on bamboo structure, Bali.



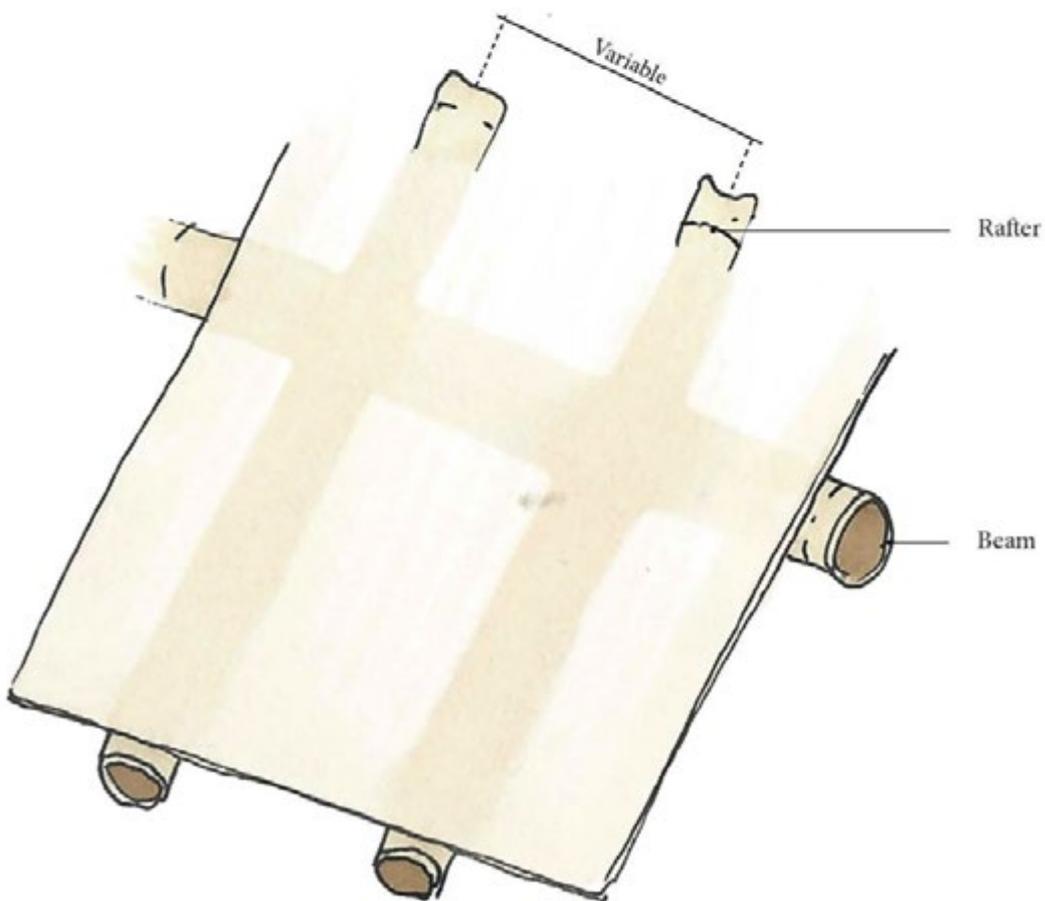
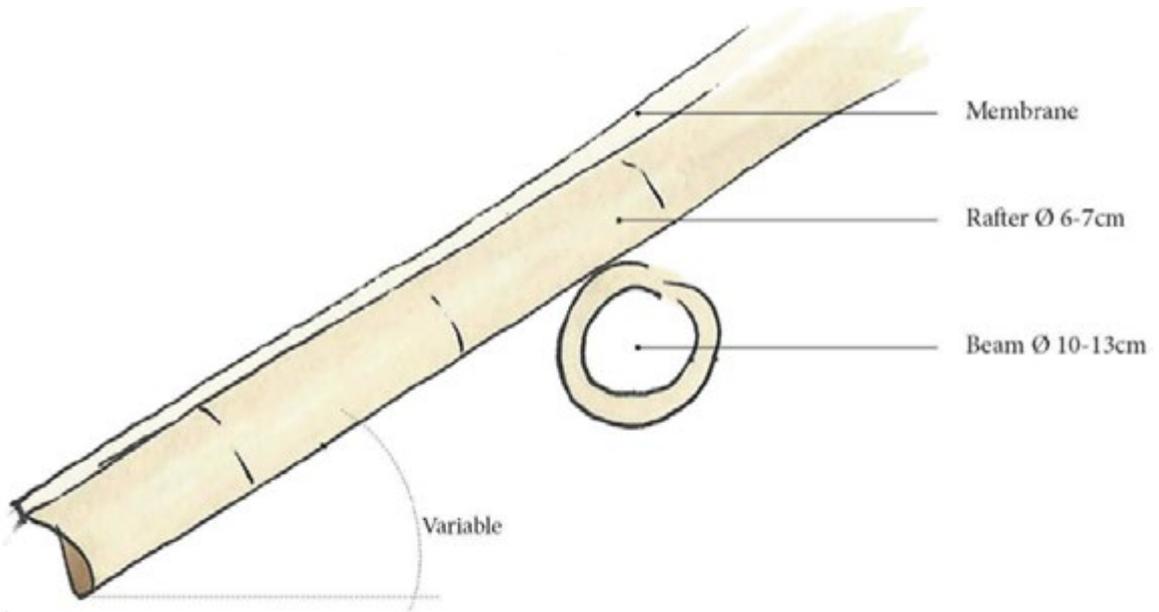
Bamboo building with membrane roofing, Japan.

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TECHNICAL DATA:

Lifespan: 10-15 years
Number of layers: 1pcs/m



SOLID POLYCARBONATE *Skylight*

Polycarbonate is a good solution for skylights to bring natural light inside the bamboo buildings. Solid polycarbonate protects against UV and reduces the heat inside. Installed with aluminium profiles and silicon for the connections, it ensures the waterproofing of the roof.

PERKS

- + Aesthetic rendering
- + Original roof shapes

TECHNICAL DATA:

Min. roof inclination: 12-50°
Spacing between rafters: 30-40cm
Lifespan: 15-20 years



Solid Polycarbonate – Seven Chakra, Yoga – Kerobokan, Bali, Indonesia. 2019.

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SYNTHETIC THATCH

Synthetic along along is adapted for really humid environments which would have necessitated many replacements on traditional along along roofing. Its 20-50 years lifespan makes it a really durable material.

PERKS

- + Good Lifespan
- + Aesthetic rendering

DRAWBACKS

- Non ecologic



Synthetic thatch installation



Synthetic thatch - Kids Playground - Joali Beig, Bodufushi Maldives 2023

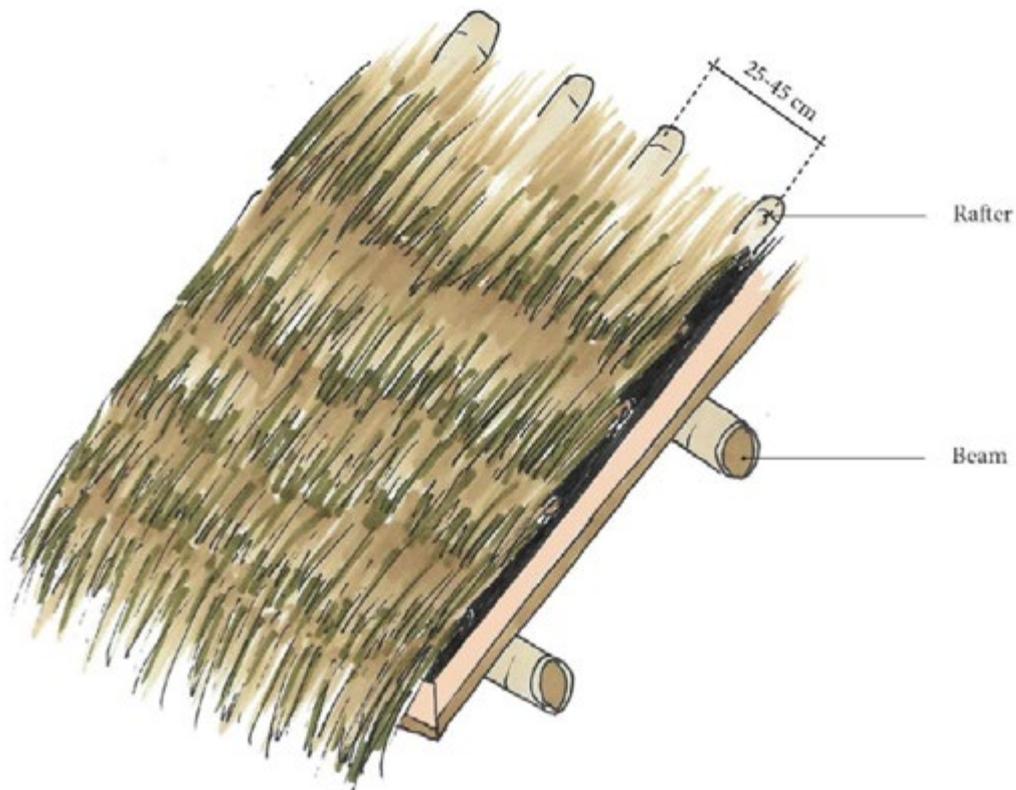
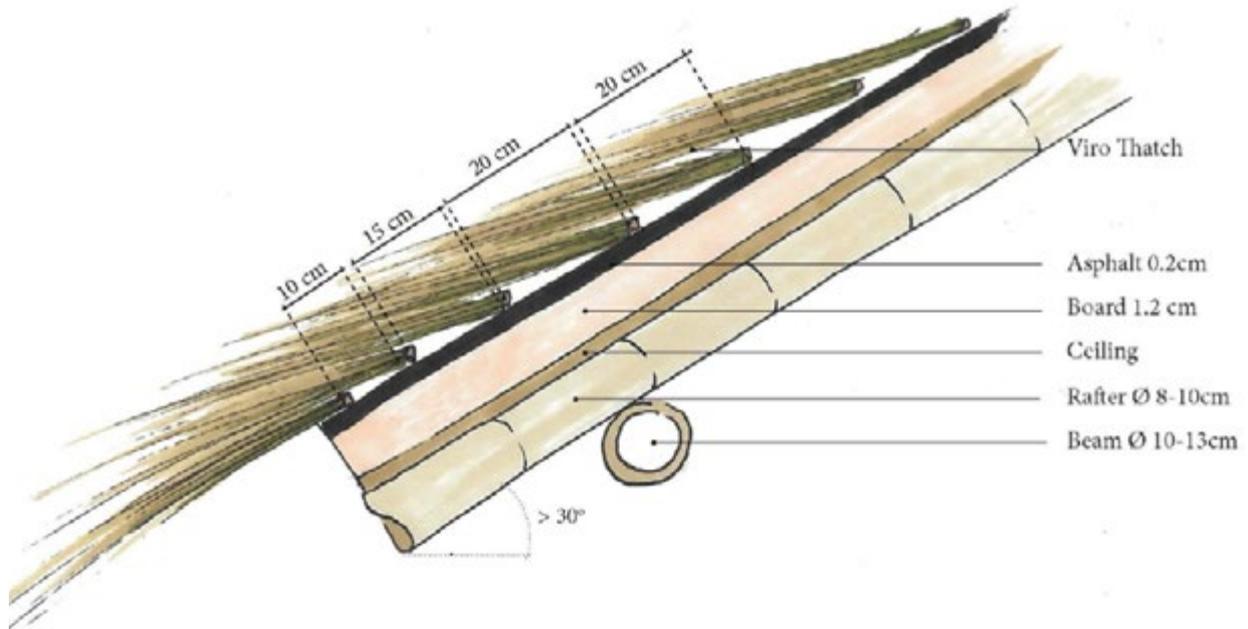
SYNTHETIC THATCH ALL CEILINGS

TECHNICAL DATA:

Lifespan: 20-30 years

Number of layers: 15-20pcs/m

Installation time: 2m²/day/pers.



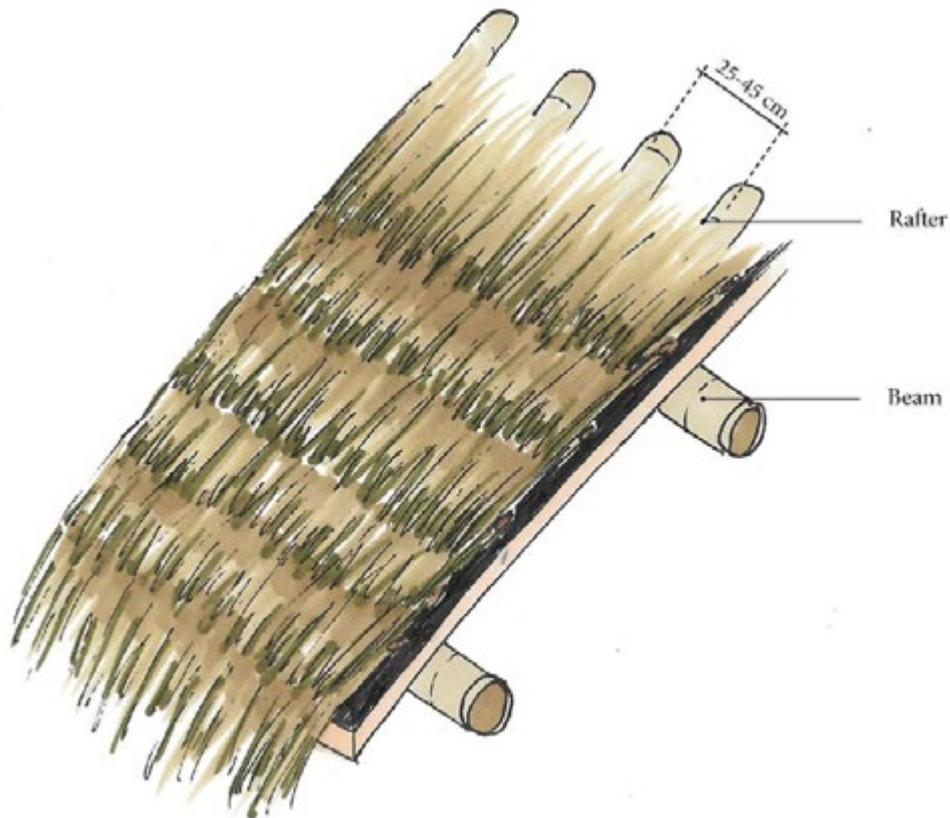
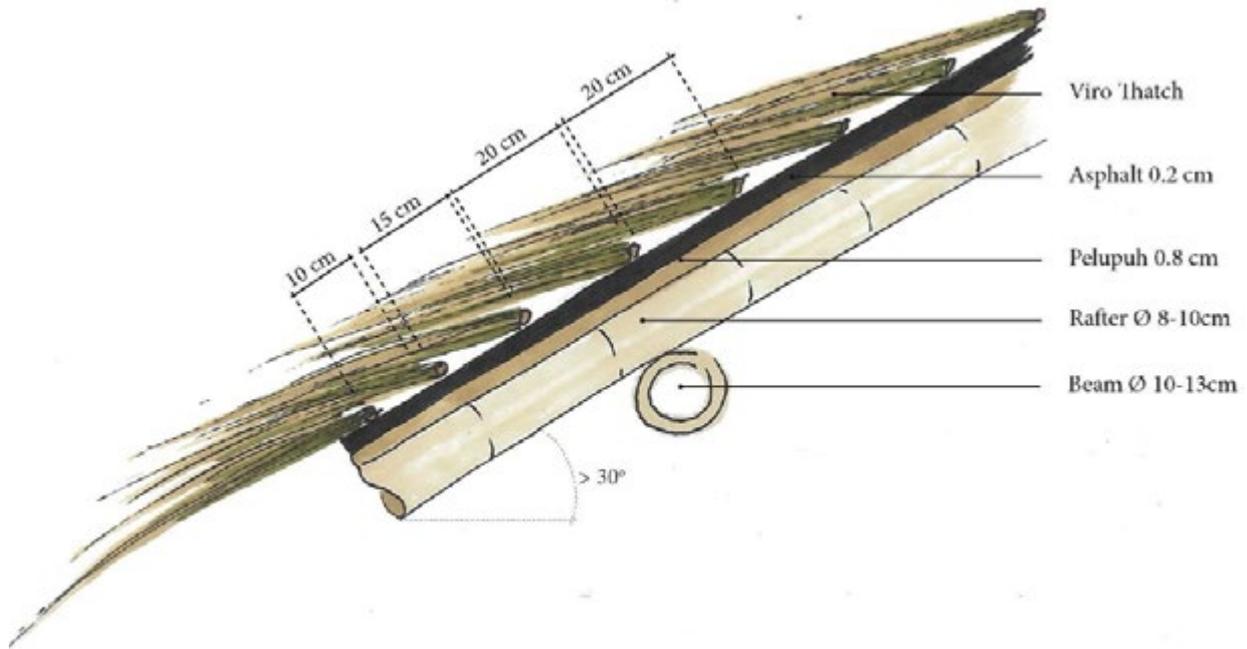
SYNTHETIC THATCH BAMBOO PELUPUH CEILINGS

TECHNICAL DATA:

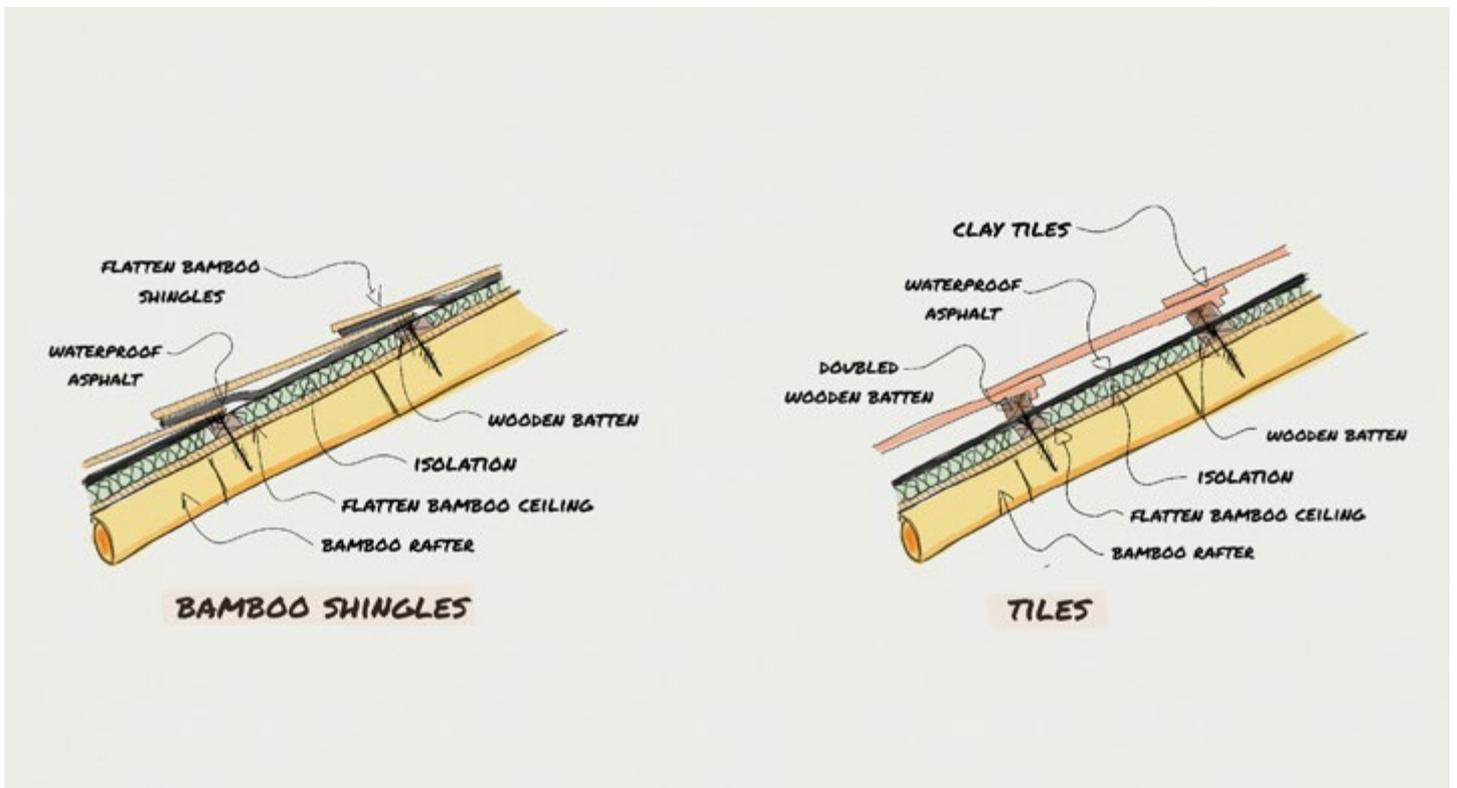
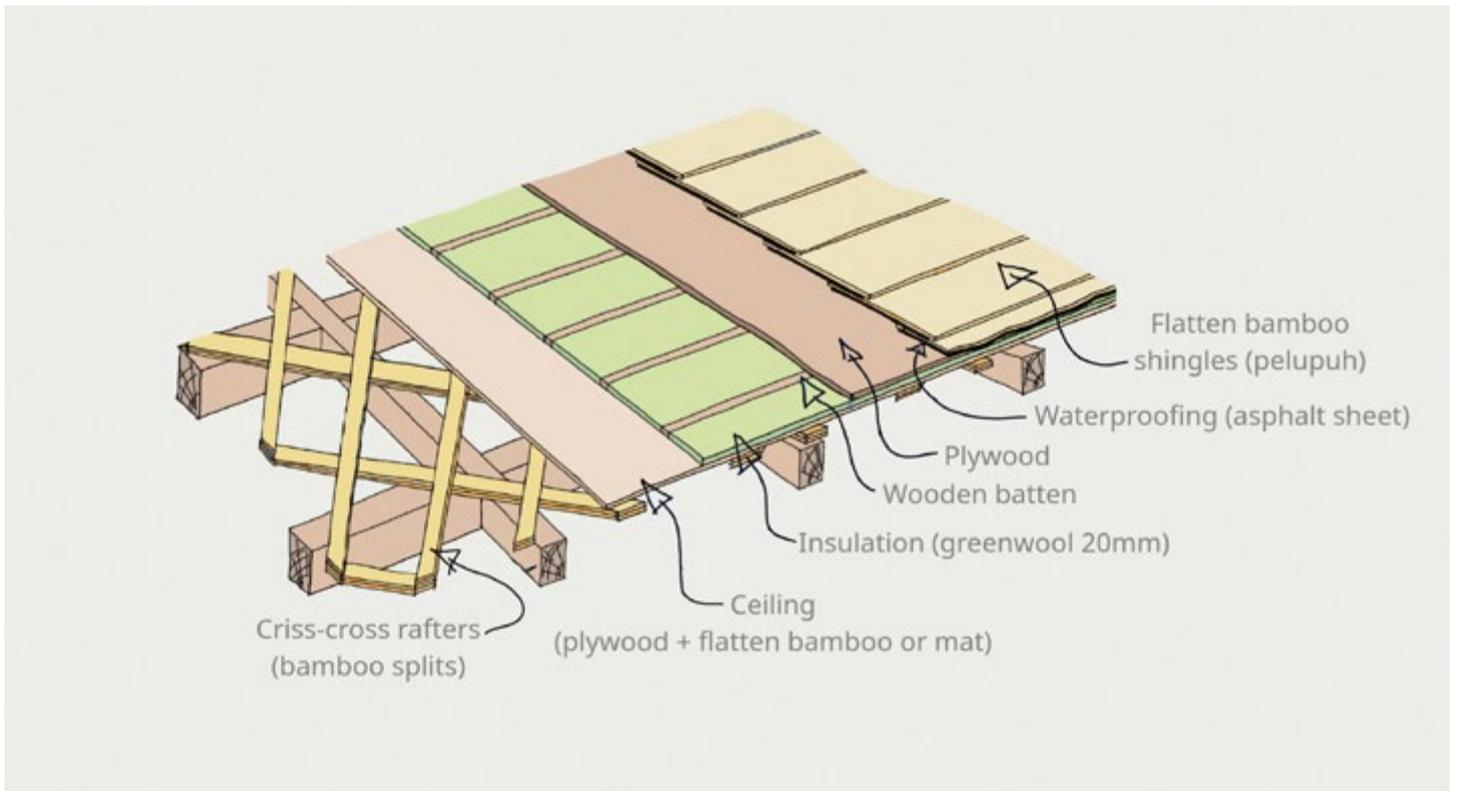
Lifespan: 20-30 years

Number of layers: 15-20pcs/m

Installation time: 2m²/day/pers.



ROOF INSULATION



ZINC ALUMINUM

Zinc aluminum is a simple solution adapted for sportive and industrial buildings. It's low price and it's rapidity to install make it an efficient roofing solution. A particular attention should be given at the screws connection to insure a perfect waterproofing.

PERKS

- + Fast installation
- + Reduced logistic
- + Reduced cost

DRAWBACKS

- Not adapted for organic curved roof



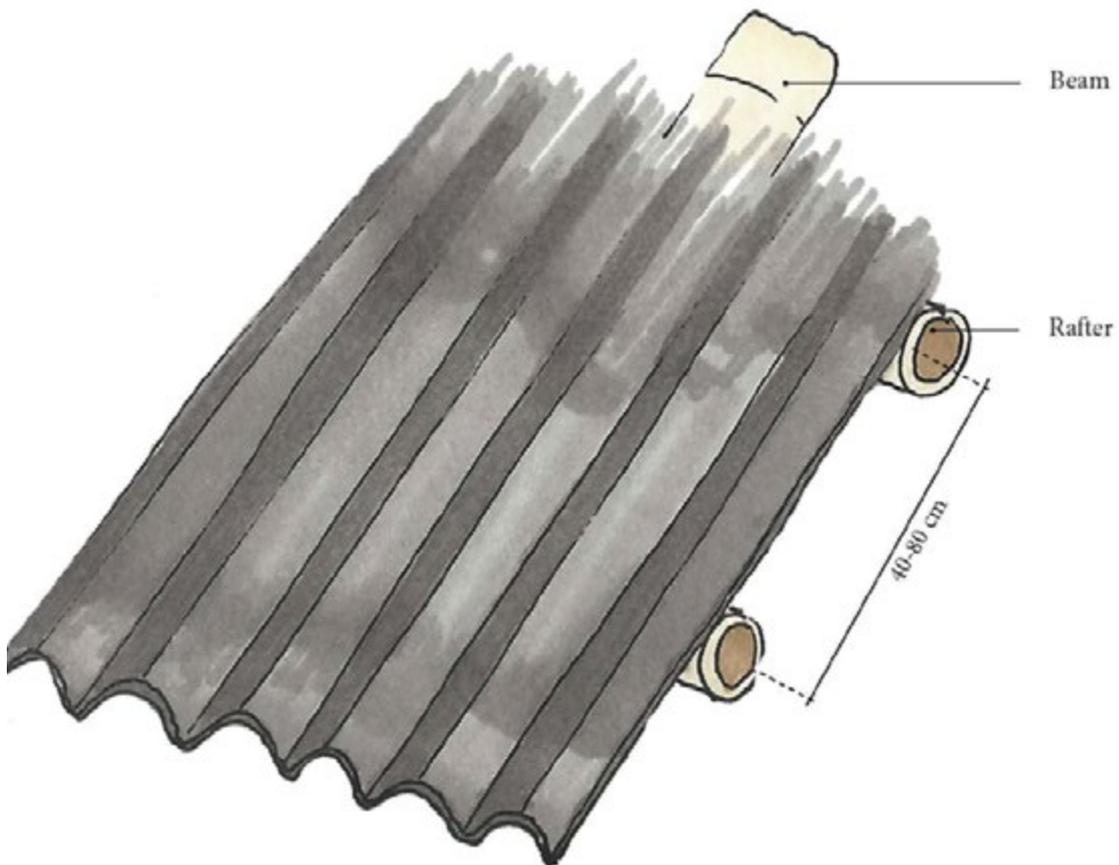
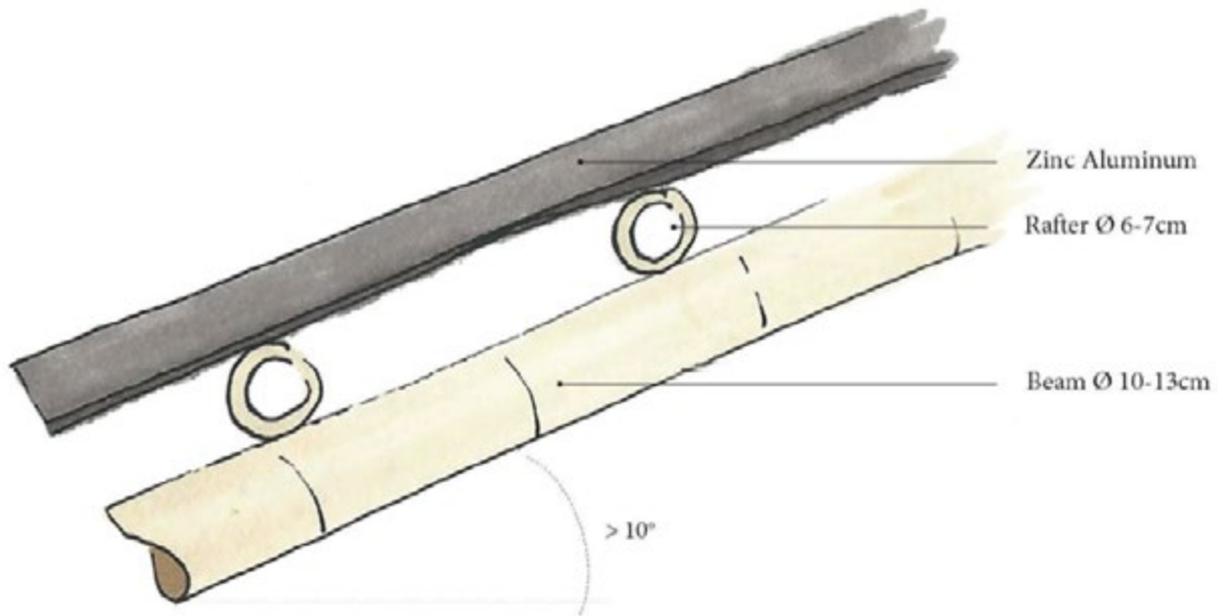
Zinc aluminum roofing – Tripper Nature, warehouse – Batubulan, Bali. 2016.

TECHNICAL DATA:

Lifespan: 15-25 years

Number of layers: 1pcs/m

Installation time: 5m²/day/Pers.



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