

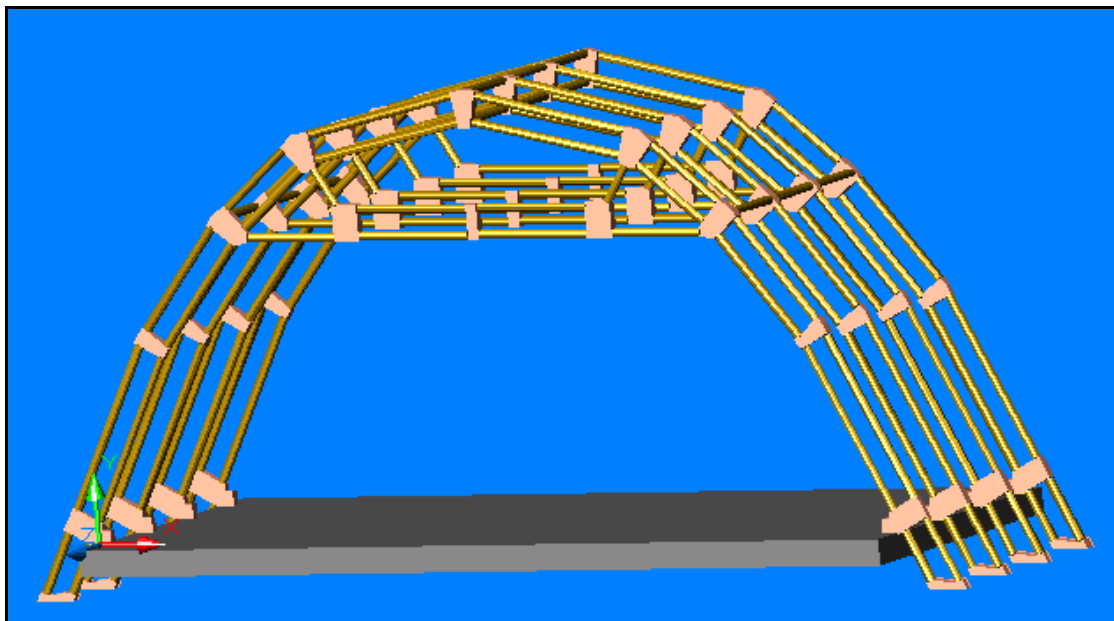
HIGH Performance in joining

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## BAMBUTEC-Roof-Truss **Parabola** out of natural round wood or bamboo

### Preferences

- Flexible shaping of roofs according to mathematic parameters.
- Improved statics due to curvature.
- As much as 15% better, advanced and seamless heat insulation between the rods compared to a rafters roof.
- As much as 20% increase of housingspace.
- The space between the rods can be used to accomodate such as ventilation-pipes , electric wires and plumbing.
- The window installation benefits from the more steep roof downwards.
- Wide range of rod materials such as teak-,oak-,pine- wood and Bamboo is easily applicable.
- Perfect ecological solution based on natural poles.

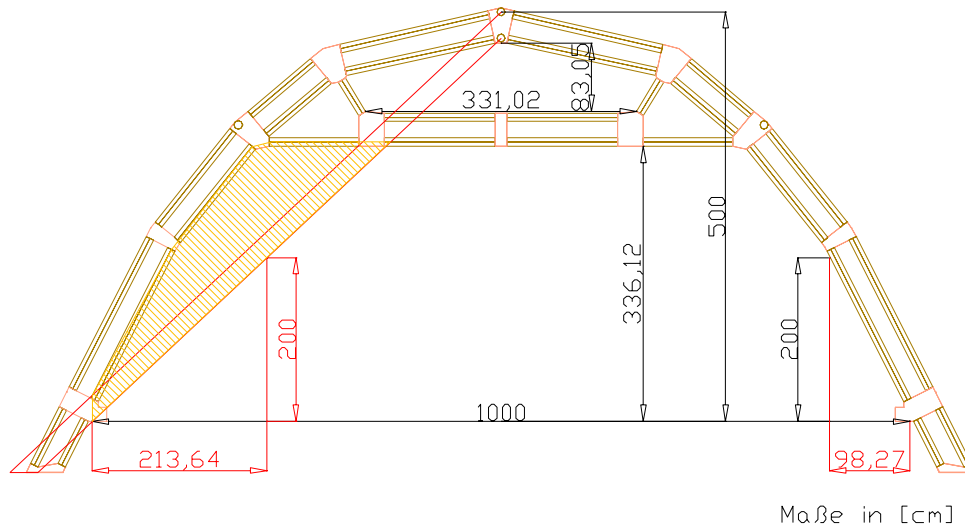


The representation assumes 10 meters / 33 feet of width on the roof. The height above floor is 5 meters / 16 feet. The original pitch of the roof related to the linear rafters-truss was 45 degrees.

From the statics point of view as well from practical consideration, the curvature in the roof causes advantages a lot. To adapt the curve to the individual desires such the mathematic formula of the parabola is parametrizable. At the same height of the roof, different curvatures are possible.

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Technical specification of the representation



Round rods in the truss dia = 10 cm/4 inch, spruce-wood. Variations out of different materials like lark-, teak-, oak-, robinia-wood bamboo and others according to local availability and desire.

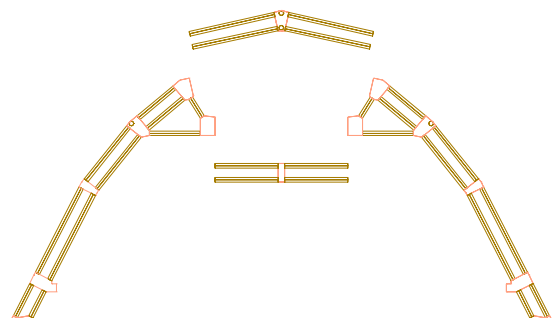
Joints made from multilayer birch-plywood or laminated bamboo or other. Fixing of the trusses by heavy-duty screw-anchors to the concrete floor. Weight per truss is 250 kg. Stabilization in horizontal direction with diagonal rods in single cells of the array or vertical in the top.

Gain in housingspace

In comparison to the standard rafters truss, the drawing shows in red lines the linear roof. Due to the steep pitch at the bottom, the border of 2 meters level is shifted 1,15m towards the outer sides. As a result the housingspace increased in area such as 20% and in volume 6,8m<sup>3</sup> per meter building lengthwise ( see hatched area).

Prefabrication and topping

The truss is extensively prefabricated. For easy handling, the truss can be divided into modules. Thus the assembly and erection is managed by manpower without a crane.



## HIGH Performance in joining

### Need of materials for one single truss

- Round rods of wood resp. bamboo:

32	pcs.	rods, length between the joints	40,91	m
64	pcs.	Endshapes, length 3 cm	1,92	m
10	%	Waste	+ 4,30	m

Total quantity of round poles needed 47,13 m

- Multilayer plywood (joints) optional plyboo (laminated Bamboo):

14	pcs	Thickness = 102 mm, made from individual boards.		
3x14	pcs	Thickness = 27 mm	5,02	m <sup>2</sup>
1x14	Stck	Thickness = 21 mm	+ 1,67	m <sup>2</sup>

Total quantity of multilayer plywood 6,69 m<sup>2</sup>

- PU-Prepolymer adhesive

64	pcs	connections of 10 g resin each	640,0	g
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### Timings in production

Time of production per rod	incl. handling	120	s
Time of production for -			
-tailoring the joints with bandsaw / cm	incl. handling	2	s
-milling of one connection	incl. handling	60	s
Assembly per connection			
incl. Injection of resin and handling		30	s