

Summary Report

Bamboo Treatment Tank Training Workshop

January 8-9th 2016

Naung Taung Monastic School, Hopong, Southern Shan State



Organized by

Whispering Earth

Funded by

Pestalozzi Children's Foundation (PCF)
Socially Engaged Monastic Schools (SEMS)
Naung Taung Monastic School

Hosted by

Naung Taung Monastic School

Background to Whispering Earth's Training Program

The Myanmar Context

Myanmar is facing a crucial turning point in the rapid development of the country. With its doors now widely open, the effects of consumer culture and rapid development can already be seen throughout the country.

In Myanmar, as with the rest of South and Southeast Asia, the migration of youth to cities in the search of employment opportunities and a more modern life leaves a generational gap at the village level. With better income, savings are sent back to those in the village to build concrete houses, creating not only a destructive cycle of family life but also unsustainable and ineffective housing. This is sadly also reflected in the critical shortage and poor quality of community buildings for healthcare, education and socio-economic development.

Conversely, Myanmar has ample natural and human resources to take an alternative path in meeting these tremendous infrastructure demands. A natural building approach, utilizing primarily bamboo and earthen construction techniques, has the unique ability to meet social (skills training, community initiated and directed development), economic (cost effectiveness, utilization of local resources and excellent return on investment) and functional (rapid construction, durability, healthfulness and aesthetically pleasing buildings) objectives.

Although Myanmar possesses a long tradition of both earthen and bamboo building, these skills have been quickly subsumed by modernization. Traditional techniques need to be preserved as well as augmented by new methods and knowledge. The merging of traditional wisdom, integrated carefully with new techniques, is key to a sustainable path of development.

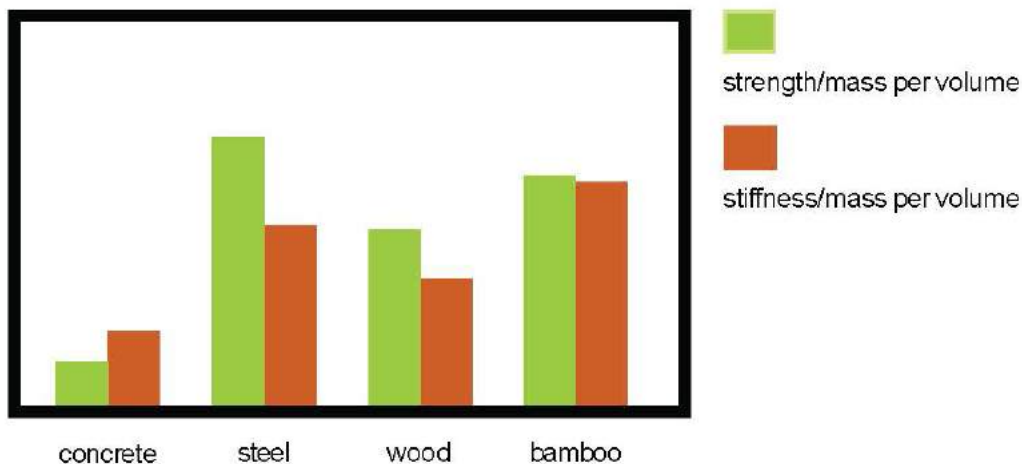


Fig. 12: Strength and stiffness comparison

Bamboo: a sustainable solution

Whispering Earth is proposing a coordinated series of workshops that will demonstrate the resilient harvesting, treatment and construction of bamboo. As part of the training, earthen building techniques will be incorporated, given the value this combination of techniques brings in relation to Myanmar's specific climate.

Selection of bamboo of the proper age, along with thorough attention to treatment techniques, is critical to the overall bamboo construction process. Separate workshops will demonstrate well-proven preservation treatment and construction methods. Sustainable forestry concepts will be introduced in these two workshops, but a third training workshop will focus directly on engaging rural communities in order to develop a sustainable approach to bamboo forestry.

A key component of Whispering Earth's approach will be the ongoing development and dissemination of these skills. Once a team of potential trainers has been exposed to the new techniques in an initial training, support will be provided for on-going Training of Trainers in order that the benefits of natural building are dispersed as widely as possible throughout Myanmar.

3 Components of Training

This first training, the Bamboo Treatment Workshop is part of a series of 3 proposed training workshops:

1. Treatment – the use of non-toxic borax treatment has been proven to extend construction bamboo's serviceable life from around 3 years to 30 years plus. Bamboo is thereby transformed from a temporary and somewhat maligned construction material into a permanent construction material.
2. Bamboo and Earthen Construction - workshops are aimed at local participants who already have basic knowledge of bamboo and earthen techniques as well as those interested in gaining new skills in these areas. Typical bamboo details and techniques that are used in contemporary projects in Thailand and Indonesia will be demonstrated, with the erection of a small building being the additional outcome of the workshop. More than convincing the public that bamboo is a permanent construction material, it is also hoped that gradually a specifically Burmese bamboo architectural tradition will emerge

Earthen building techniques offer a complete compliment to bamboo construction, bringing the thermal mass required in Myanmar's various climates, hot and cold. Training will focus on mud-brick and lime plaster techniques.

3. Forestry - Resilient bamboo forestry is required to provide a sustainable supply of good quality construction bamboo and also has potentially significant environmental, cultural and economic benefits on rural communities. The system developed in this area by the Environmental Bamboo Foundation (EBF) in Indonesia will be refashioned to suit the Myanmar context. Discussions are ongoing about bringing in experienced EBF trainers to initiate the training process in Myanmar.

Training Cost: *To be decided*



Naung Taung Sayadaw observing the first treatment

Workshop Report

Aims

- Importance of bamboo as a sustainable building material
- Importance of bamboo as a construction material in Myanmar
- 3 part cyclical relationship between sustainable bamboo cultivation/harvesting, bamboo treatment and high-quality bamboo architecture/construction techniques
- Brief introduction to bamboo sustainable forestry and importance of propagation, selection, treatment and construction
- Developing relationships with bamboo farmers
- Treatment tank construction
- Selection of bamboo for treatment
- Preparation of bamboo for treatment (transportation to site , culm preparation, node drilling)
- Borax solution mixing and preparation
- Tank heating and preparation
- Insertion of bamboo into treatment solution
- Removal of bamboo from treatment solution
- A-frame construction for initial drying after treatment
- Initial bamboo drying after treatment
- Construction of long term drying rack
- Long term storage of treated bamboo



Culm selection and preparation



Drilling of Bamboo nodes for full saturation of Borax solution in bamboo

Training Schedule

This is the schedule of the workshop which was followed:

Day 1:

09:00	Introduction (Jim)
10:30	Bamboo & Myanmar (Richard)
10:45	Course Overview (Khun Tup)
12:00	Lunch
13:00	Borax solution preparation
14:00	Culm preparation – cleaning, removal of branches
15:30	Break
15:45	Culm preparation - Making hole through node
16:30	Finish

Day 2:

08:00	Review of Day 1
08:30	Treatment - Heated Borax Method
09:45	Post-treatment – demonstrate drying and bleaching method
10:30	Review Session & Close
12:00	Lunch



Lectures and Group Discussions around Bamboo Treatment

Participants

35 participants from several areas around Myanmar attended the Bamboo Treatment Workshop. The participants came from Shan State, Kachin State, Yangon, Mandalay, Magway Division, the Delta Region and Rakhine State. These participants were carefully selected from organizations working to build schools and engaged in community development work, and included the following:

- eco-hotel operators from Mon State and Rakhine State
- a team from Hope International working in Kachin State to build a network of community based schools
- a team from PCF's (Pestalozzi Children's Foundation) network of schools around the country
- representatives from SEMS (Socially Engaged Monastic Schools) also attended
- MBLA (Myanmar Bamboo Lovers Association), based in Yangon.



Stirring of Borax and Boric Acid solution



Mixing of Borax and Boric Acid for treatment solution



Solution heating in tank



Bamboo soaking for 5 hours in heating solution



Drying in sun for 7-10 days

Trainer

The trainer for this first workshop was Mr. Thanapat Boosanan (Khun Tup) from Thor Kaichon Co. Ltd., Bangkok. Along with Khun Tup, a colleague from Arsom Silp, an independent architecture school in Bangkok, also joined the training. Tup has several years experience working with bamboo in treatment, design and construction of a variety of projects in Thailand.

Soe Zaw Win, a civil engineer and building contractor from Taunggyi, played an essential role in setting up the treatment tank, drying racks and purchasing materials – including the Borax and bamboo.



Trainer Thanapat Boosanan



A boutique hotel project in Thailand by Khun Tup

Organizing Team

The training was organized by Whispering Earth, a branch of Whispering Seed which is focused on natural building. Whispering Seed is US registered non-profit organization bridging sustainability and holistic education through innovative programs, trainings and design. Central to our approach is to draw on the richness of local wisdom and integrate this with renewable, socially appropriate models. WS target areas include:

- Permaculture and sustainable building (earth & bamboo)
- Holistic Education
- Children & Youth Development
- Mindfulness, Health & Well-being, and
- Social Entrepreneurship

Richard Morris is an architect experienced in bamboo treatment facilities and construction sites in Thailand and Indonesia. He attended the Bamboo U bamboo construction course at Green School, Bali, in December 2014. Expert contacts established through his work on projects since then were consulted during the preparation of this workshop.

Jim Connor is an educator based in Kalaw with extensive experience in earthen building. As well as facilitating earthen building training courses, Jim will structure all courses with a focus on long-term skills development and dissemination through a Training of Trainers (TOT) program.

Documentation

As well as being documented with photos, the training was captured on video. Sein Lin, a professional film maker from Taunggyi (from the Mong Pan Youth Association) offered his services to document the training. We will put together a brief video capturing key parts of the treatment process. This video will be made available online to attendees.

Daw Khin May Lwin, the Co-Chairperson of the MBLA, has also offered to make three significant texts on Myanmar bamboo available in soft copy. These texts are produced by the Ministry of Forestry and International Timber Trade Organisation (ITTO) and cover identification of Myanmar bamboo species, physical properties of Myanmar bamboos and also the cultivation of Myanmar bamboo.

An email distribution list has been set up and all resources from the training will be shared via Dropbox with the participants. These include:

- Edited video of the training workshop
- PowerPoint presentation from Khun Tup
- Borax solution concentration calculation chart

Feedback from Participants

On the last day of the workshop the organizers held a short reflection and wrap up session. Part of the session was used to gain feedback from the participants on this training, as well as introduce them to the second workshop that will be held in May to build a small classroom at Naung Taung. It was also a time for general discussion and to network. There was an overwhelming consensus to support alumni of the training with their bamboo-related work after they return back to their communities.

The following was some of the feedback from the participants:

- Several participants requested support from the organizers to hold other treatment training workshops in other parts of the country, including the construction of treatment tanks
- Several participants requested support for the planned Bamboo Construction Training workshop
- It was suggested that a short video be shown prior to doing the practical on site work so the participants could better understand the process they were learning and the steps involved in the treatment process
- An example of the final treated bamboo should be shown so participants can see what the final product will look like (being the first workshop of its kind, this was not possible for this workshop)
- Examples could also be provided to show a comparison of treated and untreated bamboo after exposure to sun, wind, rain and insects
- One participant shared that he grew up around bamboo and worked with it his whole life but never understood the importance of treatment in bamboo and its potential as a long lasting building material
- Many participants were curious about specific bamboo construction techniques (this will be covered in the next workshop in May)
- The importance of establishing a close connection with growers and farmers to ensure the proper, sustainable production of bamboo was discussed

Follow Up and Next Steps

- MBLA has agreed to help distribute Borax to those requiring it for the treatment of bamboo
- The email distribution list will be managed by Richard Morris as a platform for alumni to share questions, comments, and success stories as they begin to build their own tanks and treat bamboo. This is a temporary measure and it is hoped a national bamboo construction information forum will evolve
- Documentation as noted above to be shared to all participants
- Richard to meet with BNV (Bambusa Nusa Verde), an Indonesian organization specializing in bamboo tissue culture propagation, in Yangon on 11/01/16. It may be possible to import the best construction species of bamboo (*Dendrocalamus Asper*) to Myanmar for intensive cultivation. *Asper* does occur naturally in Myanmar (in fact it is believed to have originated here) but only grows in limited areas.
- Bamboo Construction Workshop is set for the first week of May at Naung Taung Monastic School. Information to be distributed to all participants in March.
- Bamboo treatment tanks and associated treatment training workshops have been proposed at the following locations:
 - Naung Nang school, Myitkyina (Hope International)
 - Mrauk U (Princess Hotel)
 - Kyaubadaung (Shwenadi Monastic School)

- Kyaitiyo (Shwe Zanaga Co. Ltd, in concert with the MBLA)
- Pathein (Karuna Pathein Social Services (KPSS), PCF Partner School)



Borax Treatment Tank with fire for Hot Method