BAMBOO

for

SUSTAINABLE COMMUNITIES

A Training Workshop on Bamboo

as an

Alternative Building Technology

and Livelihood Opportunity

January 17-23, 2011

Catalina Park Development, Shrine Hills, Matina,

Davao City

and

Arroyo Compound, Matina Crossing,

Davao City

The Brgy. 74-A Community: *An opportunity to showcase the community-driven upgrading process and bamboo as construction material*

On an area situated in the middle of Davao City, Philippines are people who suffer the burden of traversing a wide and deep river on unsecured bamboo poles tied together to form a light-structured bridge. These are the members of the Brgy. 74-A - a group composed of four (4) community associations, unified to the common cause of securing the land they are informally occupying. They have been living in this area for more than ten years now and have constantly been enduring this problem of unsafe access. They look to an opportunity of being able to build a reliable, safe and affordable footbridge that they, their children and elderly could use to cross over without danger.

On February 2010, the Homeless People's Federation of the Philippines Inc (HPFPI) with its partner NGO, the Philippine Action for Community-led Shelter Initiatives, Inc. (PACSII) conducted the "*National Workshop of POs and Technical Professionals in Community-Driven Upgrading and Housing"* with the aim of introducing community-driven planning and housing processes and solutions by urban poor communities. The workshop was attended by HPFPI community representatives from across the country, with volunteer community architects and engineers assisting them. Young architects from other countries also participated. The activity brought immense impact and became a great learning experience for all the participants.

During the workshop, participatory planning processes and methods were practiced and applied in five communities, including the Brgy. 74-A. The footbridge planning workshop was conducted on-site and was attended by eager community members. It was facilitated by bamboo construction experts from Indonesia (Cak and Jajang), who were assisted by engineers from academe partners and PACSII.

During the fieldwork, a very informative session on the advantages of bamboo housing and construction was also given by Cak and Jajang with Engineers Noel and Isaac and the UM team, headed by Engr. Evtri. At first, the community was hesitant to go with the idea of using bamboo as primary building material for the bridge; but after realizing the importance, integrity and affordability of bamboo, they were convinced that it is, indeed, an appropriate material for their footbridge.

After two days of community people and technical professionals working together, the community was able to make seven (7) beautiful footbridge designs. As part of the process, the community selected the three best footbridge designs. These were then consolidated by our Indonesian partners, in consultation with PACSII and Academe Partners, to come up with one final design of a footbridge to be made entirely out of bamboo, except for its foundations, which are going to be reinforced concrete.

The ongoing Brgy. 74-A bamboo footbridge initiative catalyzed a larger undertaking to demonstrate the power of community-driven upgrading and the utilization of bamboo. This undertaking takes the form of a bamboo workshop that showcases the potency of bamboo as an alternative construction material for social housing and infrastructure, and livelihood opportunity. The Brgy. 74-A with the support of HPFPI-PACSII-TAMPEI, academe, and the ACHR network, is currently collaborating on this learning activity, with primary technical guidance from Cak Fitrianto and Sahabat Bambu .

RATIONALE:

One of the Philippine Alliance's thrusts in its development initiatives, is to explore alternative building technologies and materials that are low-cost, community-friendly, environmentally sound, and locally available – i.e., technologies that can easily be managed, handled by and transferred to the communities.

This was initially demonstrated in the adoption and use of the ICEB technology (interlocking concrete earth blocks) as an alternative technology for housing, which was first used in the Iloilo CLIFF housing project, and is now also being used in the LTHAI housing project in Mandaue. Likewise, Digos City is in its preparatory stages of using the same technology.

It is therefore being hoped, that as bamboo is abundant and affordable in many regions, its potential as an alternative building material could further be explored; and if successful, it is hoped that it would have the same kind of spread effect as the ICEB.

There is also an increasingly growing appreciation for bamboo globally - as an environmentally friendly and sustainable building material, owing to its fast growing and renewable properties, among many others.

The presence of a rich resource of experience and expertise in bamboo construction, in many parts of the world, including our Asian neighbours, could guide the process of exploration and development of the bamboo technology for application in community-driven housing and upgrading projects.

OBJECTIVES:

A. To be introduced to the many uses of bamboo in the aspects of construction as well as livelihood, in both Asian and Philippine context, looking from both historical and geographical perspectives.

B. To gain basic hands-on-skills in the treatment, design and construction of bamboo structures, such as shelter and footbridge.

C. For local participants from the different regions to gain enough knowledge and awareness of the bamboo technology that will enable them to assess and explore the possibility of adopting the latter for housing and upgrading projects in their own regions.

D. To obtain sufficient technical guidance in the implementation of the Matina Bamboo Footbridge Project

E. To learn new techniques of constructing with bamboo in stronger and more lasting ways as a way of enhancing traditional and vernacular methods of building with bamboo.

F. To establish a network of mutual support for Asian countries interested in the development of application of bamboo technologies for housing and infrastructure.

PROGRAM DURATION & FLOW

PART 1: OVERVIEW (1 Day)

TOPICS	ACTIVITY / METHOD OF INPUT	POSSIBLE DURATION
General Characteristics and Uses of Bamboo Bamboo as an Alternative Building Material in Asia/rest of the world in the Philippines	Resource persons; Venue with exhibit boards and display booths of different bamboo products, etc.	½ Day
What we should know about bamboo: Propagation and harvesting Parts of the bamboo; Useful species	Site visit to a bamboo plantation; with resource person. Display/exhibit of different bamboo species available in Davao & locality	½ Day

PART 2: TREATMENT OF BAMBOO (1 Day)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Introduction/general overview of different possible ways of treating bamboo, to include: Procedures & materials used Pros & cons of each method Life span of treated bamboo vis-à-vis treatment method used	Resource persons	2 Hours
The Vertical Soak Diffusion Method Setting up of Treatment Facility Materials and tools used Treatment procedures Do's & Don'ts	More detailed inputs by resource person/s Hands on demonstration at treatment facility Participants to do hands-on treatment	Rest of the day

PART 3A: BAMBOO SHELTER DESIGN, COST ESTIMATE & CONSTRUCTION (2 Days)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Climate, Vernacular and Bamboo: Bioclimatic Approach in Green Architecture *(to be confirmed)* Architectural & Structural Design Principles and Guidelines for Bamboo Housing Cost estimating (in bamboo construction)	Resource persons Hands-on Exercises on design and construction (E.g., Participants make miniatures to learn/ demonstrate housing construction principles – *to be finalized)*	½ Day
Housing Construction & Joinery methods for: Structural parts Non-structural parts	Hands on training: Construct portion of a small shelter for Matina community; Construction of different structural components could be assigned to different groups	1 ½ Days

PART 3B: BAMBOO FOOTBRIDGE CONSTRUCTION: (2 Days)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Matina Community Profile, Footbridge Project Rationale, Process & Updates of what has been done Footbridge Design & Construction, including: Site & other Design Considerations Final Footbridge Design Structural Design & Construction Process Foundation Design & Construction, including: Structural Design for Conscrete Foundation Construction Process for Concrete Foundation	Resource persons Hands-on Exercise (E.g., Participants to make miniatures to learn/ demonstrate structural principles – *to be finalized*).	½ Day
Construction & Joinery methods	Hands on training at Matina footbridge project Participants to do hands-on construction	1 ½ Days

PART 3C: REVIEW/ASSESSMENT/REFINEMENT AND WRAPPING UP: BAMBOO PROPERTIES, TREATMENT, HOUSE & BRIDGE DESIGN & CONSTRUCTION (1 Day)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Review/Assessment on: Bamboo Properties/Species/Propagation & Harvesting Bamboo Treatment Bamboo House/Shelter Design & Construction Bamboo Bridge Design & Construction	This will be a kind of hands-on-"exam" to review and test what the participants have learned. It will also help to know what aspects the participants should focus on doing for Day 8: PART 3D: Enhancement: Further Hands-on Training.	1 Day
Wrapping Up and Evaluation of Parts 1,2 & 3	Discussion	1.5 hours
Farewell socials for / last night of International Participants		Evening

PART 3D: ENHANCEMENT: FURTHER HANDS-ON TRAINING FOR REMAINING LOCAL PARTICIPANTS (1 Day)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Participants continue to work on bamboo bridge and shelter, on the different aspects (treatment, bridge construction, shelter construction, etc.) of their choice.	Participants to work in groups; groups to focus on specific area of work or skill. Participants from each region encouraged to select different areas of work or skill.	1 Day

PART 4: BAMBOO AS LIVELIHOOD ENTERPRISE (1/2 Day)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Possibilities for Bamboo as Livelihood Enterprise: Bamboo Farming Furniture & Decorative Products Others To include basic guidelines for setting up and operating a community-managed bamboo enterprise, start-up capital required, etc.	Resource person/s Exhibits/demonstrations of products, etc. Possible Practical Exercises *(to be finalized):* Participants could be asked to make a small easy-to-make bamboo decorative product; OR Exercise on setting up small-scale bamboo business (role playing in groups)	½ Day

PART 5: PLAN OF ACTION PER REGION / WORKSHOP EVALUATION / CLOSING (1/2 Day)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Possibilities for Bamboo as Livelihood Enterprise: Bamboo Farming Furniture & Decorative Products Others To include basic guidelines for setting up and operating a community-managed bamboo enterprise, start-up capital required, etc.	Resource person/s Exhibits/demonstrations of products, etc. Possible Practical Exercises: *(to be finalized)* Participants could be asked to make a small easy-to-make bamboo decorative product; OR Exercise on setting up small-scale bamboo business (role playing in groups)	½ Day

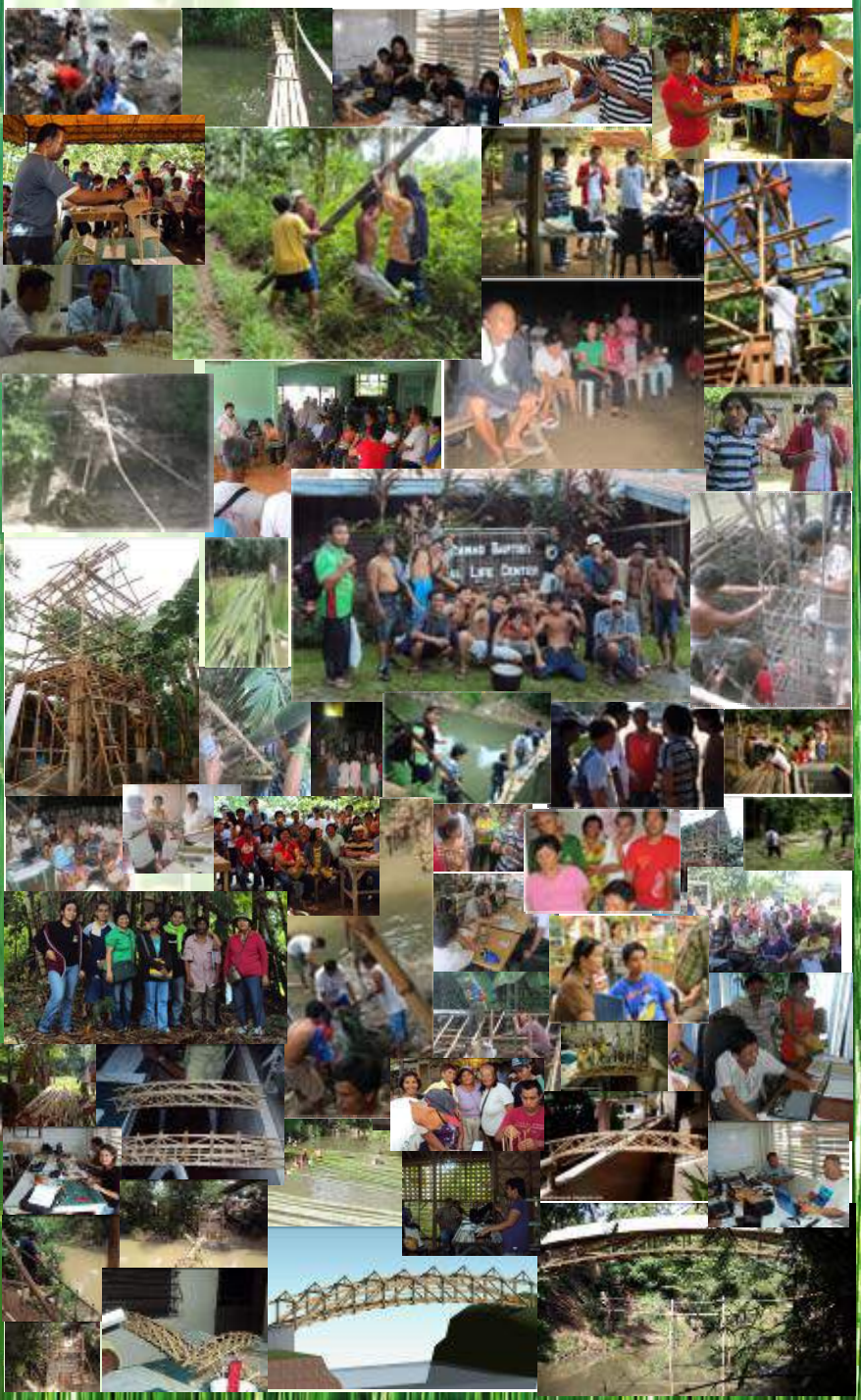
PART 6: EXTENDED HANDS-ON TRAINING & ACTUAL CONSTRUCTION OF MATINA FOOTBRIDGE & SHELTER (OPTIONAL FOR OTHER REGIONS) (12-14 Days)

TOPICS	POSSIBLE FORM / METHOD OF INPUT	POSSIBLE DURATION
Optional extended stay to train as well as to assist in the construction of Matina Footbridge and of started shelter	For bamboo artisans from other regions, Mindanao-based participants, community participants and others interested Participants to be limited to 8-10 each for shelter and bridge	Up to first week of February 2011

DAY/TIME	Program of Activities	PREPARATION NEEDED and Venue
DAY 0: 16 JAN	ARRIVAL OF PARTICIPANTS (International and Local) Arrival, Check-In and Registration, Distribution of Workshop Kit	
DAY 1:17 JAN	**PART 1: BAMBOO PLANTS and TREATMENT OF POLES**	
7:00 – 8:00	Breakfast for early arrivals Registration Introduction of Participants	*Catalina Park Development, Shrine Hills, Matina*
8:00-8:30	Invocation	
	Opening/Welcome Remarks (Brgy. 74-A) Messages of Support (Davao CPDO) Messages of Support (Davao City Council)	
8:30-8:40	Preliminaries / House Rules	PPT Presentation
8:40-8:55	Rationale & Objectives of the Workshop: Why bamboo?	PPT Presentation
8:55-9:15	Summary of Expectations/Focus of Interests of Each Regions (+ Additional expectations from participants)	PPT Presentation
9:15-9:20	Rundown of Workshop Programme & Activities for the next 7 days	PPT Presentation
9:20:-9:30	Coffee Break	
9:30-10:15	TOPIC 1A: Overview of Bamboo structures South East Asian Bamboo context (15 Mins) Philippine Historical Developments of Bamboo (15 Mins) Contemporary Bamboo Architecture (15 Mins)	PPT Presentation
10:15-11:15	TOPIC 1B: Getting to Know the Bamboo: Characteristics (15) Propagation & harvesting (30 mins with Video presentation) local species (15 mins)	PPT Presentation Video presentation
11:15-11:45	TOPIC 1C: Introduction/general overview of different possible ways of treating bamboo (General and VSD)	PPT Presentation
11:45-12:00	Open Forum	
12:00-12:10	Briefing for afternoon's visit to bamboo plantation	
12:10-1:00	LUNCH	
1:00 – 2:00	Travel to Bamboo Plantation Km. 6 Matina Pangi	Matina Pangi
2:00 – 3:00	1ST Session: On-site demonstration and inputs on different species, propagation and harvesting/ cutting	Session 1: Bolo Knives and Saws, and Tarpaulin posters
3:00 – 3:30	Travel to Matina Crossing site	
3:30 – 5:00	2nd Session: Hands-on demonstration of the VSD treatment method	Session 2: Drills, Boraid, pump, etc
5:00 – 5:30	Travel back to Workshop Venue	Shrine
6 :00 PM onward	DINNER / Small welcome cultural presentation	Shrine
DAY 2:18 JAN	**PART 2: BAMBOO for CONSTRUCTION**	
8:00-8:15	Recap of Day 1 Activities / Run-down of Day 2 activities / Announcements	Shrine
8:15-8:45	Climate, Vernacular and Bamboo: Bioclimatic Approach in Green Architecture	PPT Presentation
8:45-9:15	Country Sharing on Bamboo: Bamboo architecture in Columbia	PPT Presentation
9:15-9:30	Coffee Break	
9:30 – 9:45	Country Sharing on Bamboo: Bamboo architecture in Indonesia	PPT Presentation
9:45 – 10:30	Matina Pedestrian Bridge Project: Community Profile and Development Context (20 Mins) HPFPI and PACSII interventions (10 Mins)	PPT Presentation
10:15 – 12:45	Matina Pedestrian Bridge Project: Bridge design (30 Mins) Foundation and Bridge structural aspects (30 Mins) Construction process (30 Mins)	PPT Presentation
12:45-1: 30	LUNCH	
1:30 – 2:00	Travel to Matina Community	Matina Community
1:30 – 3:30 PM	*DEMONSTRATION OF ACTUAL FOOTBRIDGE CONSTRUCTION*	
3:30 – 5:30 PM	Basic introduction of joints Initial input on Joinery Divide pax into 3-4 groups of 10 to do real scale joints Presentation of their work	Power point And hands on work
6:00 - onward	Dinner	Dinner at Matina Site
7:00 PM	Participants brought to Lodging sites	
DAY 3:19 JAN	**PART 2: BAMBOO for CONSTRUCTION (contd.)**	
7:00-8:00	Breakfast	Shrine
8:00-8:10	Recap of Day 2 Activities / Run-down of Day 3 activities / Announcements	
8:10-8:40	Country sharing on bamboo Thailand:	PPT Presentation
8:40-9:10	Country sharing on bamboo Cambodia:	PPT Presentation
9:10-9:20	COFFEE BREAK	
9:20-9:50	Country sharing on bamboo Vietnam:	PPT Presentation
9:50 – 12:00	Hands on Workshop on the Matina shelter structure	
12:00-1:00	LUNCH	Shrine
1: 00 – 1:30	Travel to Matina Community Site	Shrine
1:30-5:30	Hands on Workshop on the Matina shelter structure	
6:00	Dinner	Matina site
7:00 PM	Participants brought to Lodging sites	

DAY 4: 20 JAN	PART 2: BAMBOO for CONSTRUCTION (Cont'd)	
7:00 – 8:00	Breakfast	Shrine
8:00 – 8:45	Bamboo: advantages and uses in view of climate change (*may include inputs on treatment, show case designs as introduction to topic on livelihood*)	
8:45 – 9:00	Travel to Matina Site	
9:00 – 12:00	Groups to continue with their bamboo components	Matina Community Site
12:00- 1:00	LUNCH	
1:00 – 5:30	Groups to continue with their bamboo components	
6:00 – 7:00	Dinner	Matina Community Site
7:00 PM	Participants brought to Lodging sites	
DAY 5: 21 JAN	PART 3: REVIEW/ASSESSMENT/ REFINEMENT and WRAPPING UP: BAMBOO DESIGN & CONSTRUCTION	
7:00-8:00	travel to and breakfast at Matina site	Matina Site
8:00-12:00	Groups to continue with their bamboo components	Matina Site
12:00 – 12:45	Lunch	
12:45 – 1:00	Travel to Catalina Park Development, Shrine Hills, Matina	Matina Site
1:15 – 2:15	Hands-on Review/Assessment on Bamboo Shelter Construction (Assessment could be done in groups/ Presentation of each group)	Assessment forms
2:15 – 2:30	COFFEE BREAK	
2:30- 3:30	Review/Assessment on Bamboo Properties/Species/Growing & Harvesting, Bamboo Treatment	Assessment forms
3:30 – 4:30	Wrapping Up and Evaluation of Parts 1,2 & 3	Power point
	ENHANCEMENT: FURTHER HANDS-ON TRAINING FOR REMAINING LOCAL PARTICIPANTS	
4:30 - 6:00	Participants invited to work on bamboo footbridge and shelter, on the different aspects (treatment, bridge construction, shelter construction, etc.) of their choice.	Enhancement process
6:00	Dinner	Matina Site
7:00 PM	Participants brought to Lodging sites	
DAY 6: 22 JAN	PART 4: BAMBOO AS LIVELIHOOD	
7:00-8:00	Breakfast	Shrine
8:00-8:15	Recap of previous Day Activities / Run-down of Day 6 activities / Announcements	PPT Presentation/
8:15- 9:00	4A. Possibilities for Bamboo as Livelihood Enterprise.	PPT Presentation/
9:00-9:15	COFFEE BREAK	
9:15-10:00	4B. Basic guidelines for setting up and operating a community-managed bamboo enterprise	PPT Presentation/
10:00-11:00	4C. Practical Exercise on setting up small-scale bamboo business	To be discussed with Prof. Alice
11:00-12:00	4D. Practical Exercise on making a small easy-to-make bamboo decorative product	To be discussed with Mr Icawalo
12:00 – 1:00	LUNCH	
1:00-1:30	4E. Bamboo furniture making	
1:30 – 5:30	4E. Bamboo furniture making (Hands on with same groupings)	
5:30 – 6:00	Wrapping up of Part 4	PPTPresentation/etc
6:00	Dinner	Shrine
6:00 – 7:00	Participants brought to Lodging sites	
DAY 7: 23 JAN	PART 5: PLAN OF ACTION PER REGION/ WORKSHOP EVALUATION/CLOSING	
7:00-8:00	Breakfast	Shrine
8:00 – 8:30	Recap	
8:30 – 9:30	Per-region discussion to assess possibility of the use of bamboo as an alternative building material and/or as a community-driven livelihood enterprise; draw plan of action accordingly (*International participants can join the planning activity and plan for their own country)*	Process and guide questions
9:30- 10:15	Regional presentations/reporting	LCD Projector and ppts
10:15 – 11:00	Synthesis/Summing up of Parts 1-5	
11:00 - 12:00	Workshop Evaluation:	Forms, if written evaluation
12:00 – 1:00	LUNCH	
1:00 – 2:00	CLOSING	
	Remarks/Speeches, Acknowledgments	
	Awarding of Tokens of Appreciation (to resource persons)	
	Awarding of Certificates of Attendance	
2:00 – 5:00	*FREE (Rest / Shopping / City Tour /Visit Davao communities)*	
6:00 onwards	**Farewell Dinner / Activity**	Catalina Park Development, Shrine Hills, Matina

The Bamboo Footbridge: A Community's Journey



PARTNERS AND COLLABORATORS

For the design and construction of the Matina Footbridge and for the organisation of the training workshop, the following groups have been tapped to support and collaborate:

PARTNERS:

Barangay 74-A – a group composed of four (4) community associations (MABANA, St. Benedict, Shalom and St. Paul), are members of the HPFPI and took initiative to build the bamboo footbridge. The Federation members actively take the lead in all activities related to their footbridge project, including processing papers, permissions and requests to the LGU to provide the equipment needed; procuring materials to be used for construction of both treatment facility and footbridge; mobilizing community people to provide free labor as well as food for the workers during construction; and undertaking workshop preparations in the community.

Philippine Alliance (HPFPI-PACSII): Homeless People's Federation Philippines, Inc. & Philippine Action for Community-led Shelter Initiatives, Inc., spearheaded by the HPFPI-PACSII-Mindanao as host region & the Matina Crossing Federation, as host community.

Technical Assistance Movement for People and Environment, Inc. (TAMPEI) - together with Philippine Alliance & Bgy. 74-A communities, its local counterpart MANTAS, is spearheading the organization of the training workshop.

Asian Coalition for Housing Rights – providing main financial support for technical assistance in the Matina footbridge construction; financial support for the training workshop; providing assistance in local and regional coordination work for the organisation of the training workshop, sourcing of international resource persons and technical support.

Sahabat Bambu –Indonesia - mainly providing technical guidance in the design and construction of the Matina footbridge and providing primary inputs and facilitation in the training workshop.

University of Mindanao– providing of technical engineering computations in load and structural analyses of bamboo bridge frame and assistance in foundation works.

University of the Philippines Mindanao– input in Bridge Concept Design and design properties and assistance in workshop preparation of kit's materials.