ONE UNIVERSITY ONE VILLAGE 一專一村

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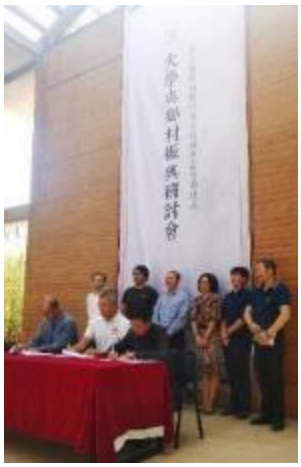
University & Rural Revitalization Symposium @ Kunming

In September this year, 1U1V team of The Chinese University of Hong Kong (CUHK), Kunming University of Science and technology (KMUST) and Tsinghua University jointly organized a "University & Rural Revitalization Symposium" cum the kick-off ceremony for "The Research and Development Centre for Rural Vitalization in Yunnan" (ie. 1U1V Earth Building Research and Development Centre in Kunming) in KMUST campus. The center will be a place for conducting experiments, training for workers and exhibitions of earth construction techniques. In the ceremony, Prof Edward Ng from School of Architecture, CUHK, Prof Zhai and Prof Bai from Faculty of Architecture and City Planning, KMUST signed an agreement to define the organization structure, work plan and the vision of the Centre. With eight Chinese words "土圭垣墨．塾堯坤垠" as the vision and taking earth construction (土) as the starting point, the team aspires to create the pioneering and representative values of harmony and beauty (圭); to improve the living conditions of rural villagers by building houses (垣); to provide guidance and standards on earth construction, and publish relevant journal articles (墨); to establish artisan training systems and facilitate inter-disciplinary collaborations between universities and organizations (塾) ; to enhance the villagers' quality of life and sense of well-being, and promote rural sustainable development (堯) ; to raise awareness and continuously pass down, in China and around the world (坤), the systematic methods and innovative ideas of rural sustainability (垠).



The seminar started right after the kick-off ceremony. A number of university experts and scholars were invited to join. The seminar topics covered "university research", "rural construction projects" and "local materials in rural areas". In these two-day seminar, total 15 keynote speakers shared their reports, in which covering the exploration and study on rural revitalization from planning, design, construction technology to humanities, environment, education, etc.Their efforts paid on rural revitalization were fully demonstrated. More than 400 participants came from universities,

design institutes and local government officials gained more confidence and learned more how to practise in rural revitalization after participating the seminar.

In the afternoon of September 17, the organizers and some guests visited 1U1V project site in Dabaiyi Village. The guests gave high appreciation to 1U1V work and the construction efforts put into the Centre.

Last but not least, 1U1V team would like to express gratitude to Faculty of Architecture and City Planning, KMUST for supporting the construction of the Centre and the seminar, all keynote speakers for their rigorous and dedicated attitude and sincere sharing as well as 1U1V team members and volunteers for their support and contributions. Based on the discussions in the seminar, 1U1V team will fully study and learn the research outputs and experience shared by the experts and scholars, and also use Centre as a base to continue to make more innovative achievements and contributions to rural construction and sustainable development.

Our Projects

Site Location: Qiunatong Village, Gongshan County, Nujiang Prefecture, Yunnan

Project Nature: Rural Sustainable Development Assistance Programme

Teams: CUHK, Peking University & Kunming University of Science and Technology

Project Duration: Dec 2013 – Dec 2020

A Picture Book About Nu River Valley

Due to impact of urbanisation, the ethical culture in the Nu River Valley is declining rapidly. The team wishes to design and publish a picture book for children of folktales in Nu River Valley. The picture book itself serves as an exploration of the local identity as well as educational material. It also provides a glimpse for outsiders to the lives of Nu River people and their cultures.

The team will take children educational psychology and basic knowledge of children aged 0-3 as reference. The storyline of the book can focus on the relationship between parents and children, family environment and children's physical and mental development, rhythm of life, and social and emotional learning. The text format can be a novel, a fairy tale, a bio or an objective scientific piece, and the content needs to be easy to understand with illustrations matched closely with simple text. In order to make the book a cognitive reference for the local ethnic groups and its living environment, its theme may relate to these five stories: myths and legends (where come from), children's adventures (where to go), house built (the relationship between the individual, the family and the community), the livelihood and environment (the relationship between life and nature) and the Nujiang and her friends (Sanjiang river area, South Asia mountain culture area). At present, the work for data screening and storyline writing is going on. This book project shall be completed within two years.

Village Community Building

At present, the team is working on trust building and opportunities exploration. The team participated in the workshops on "Community Conserved Areas and Endogenous Development" which was organized by Lijiang Health and Environment Research Center in November 2018 and April 2019. The center has practiced ecological protection and rural community construction in rural China for more than 30 years. It helps to foster village community autonomy, contractual spirit, democratic deliberation and fair procedures in order to promote rural economic environment, sustainable social development, and provide demonstration of the country's rural revitalization strategy. The workshop in April also allowed the villagers of Malo Village to join and learn the village community's ecological and social public interests which may help them to solve the problems in the village.

Training for Service Learning Programme

In April 2019, the team was invited to participate in the 2019 Service Learning Programme organized by Chung Chi College of the Chinese University of Hong Kong to provide pre-service training for undergraduate students and advise them how to design the service plans. The training content mainly includes: the current situation of economy and education development in rural China, the basic knowledge of children's educational psychology, the skills of communicating with children and the basic knowledge of field research. The teacher-in-charge of this service learning programme believed that the training is very practical and effective. It will be of great help to the services that the students will carry out in July this year.

Site Location: **Dabaiyi Village, Xiyang Township, Jinning County, Kunming City, Yunnan**

Project Nature: Earth Building

Teams: CUHK & Kunming University of Science and Technology

Project Duration: Feb 2017 – Dec 2017 (1st phase project)

Apr 2018 – Apr 2019 (2nd phase project)

Since 19 October 2018, the team launched to start the house rebuilding work for the 2nd phase project with the local government's assistance. The construction team was divided into two teams. One consists of the villagers who come from Guangming Village of Ludian County, process rich experience in rammed-earth construction. Another one which consists of the local villagers of Xiyang Township is led by two 1U1V head artisans and one artisan with experience in rammed-earth construction. Each team are responsible for building two village houses separately.

By the end of March 2019, the wall building work for four village houses (with five households) was completed under the full cooperation of the teams. Although there are differences between two teams in term of rammed-earth construction experience, the teams always learn from each other during the process. As a result, two teams achieved the same quality standards regardless of the appearance of the wall, the density of compaction, the shrinkage joints and the layered texture control. Each newly built rammed-earth house are gain high recognitions from the local villagers.

The team completed the entire project by the end of April 2019. On 30th April, handover to households was completed successfully. Because the materials used in the project are all natural and pollution-free, households can immediately move in and arrange furniture for the new houses right after the completion. All of them were happy with the houses. Some came to ask our on-site resident interior designer for the advice on the interior furniture setup. A very good trust and relationship were established between them.

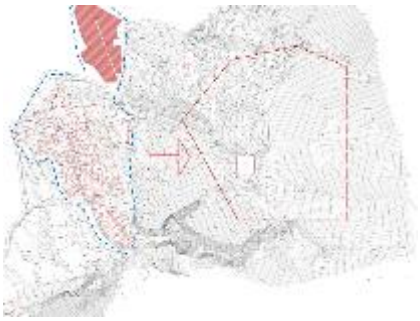
After successful completion of two phases of the housing rebuilding project in the village, some villagers with hesitation and distrust before took initiative to express their wishes and hoped the team can help them to build houses. The team will try to discuss with the local government and continue to carry out more anti-seismic rammed earth construction projects to benefit to more villagers in need.

Site Location: **Gaoliangdi Village, Xiyang Township, Jinning District, Kunming City, Yunnan**

Project Nature: Earth Building

Teams: CUHK & Kunming University of Science and Technology

Project Duration: Oct 2018 – Dec 2020



Since the signing of the Memorandum of Understanding in May 2018, the project was delayed almost one year due to the regional development planning work of the Xiyang Township government. After about one year discussion, the township government restarted the preparation work for rebuilding plan of Gaoliangdi Village in April 2019 and decided to carry out partial renovation work for the old village so that it can be reserved for future tourism and commercial purposes. The original 71 village houses will be moved eastward to form an individual new village. And the old and new villages will be connected by a landscape walking trail. This planning not only solves the land use conflicts between highway and the project, but also solves the resettlement problem during the construction period. Meanwhile, it is conducive to future comparative research study of the new and old villages. Due to the large scale of the project and the requirements of the government department for poverty alleviation, the team pays great attention to all aspects from design to construction organization. Professor Zhai from Kunming University of Science and Technology is responsible for the preliminary planning and design and tries to preserve the traditional village for sustainable development. The project is tentatively scheduled to start the infrastructure construction of the new village by the township government in November 2019. The team will carry out the house rebuilding work afterward. It is expected that the project will be completed before the Lunar New Year in 2022 so that the villagers can move in new home for new year.

Site Location: **Dahei New Village, Xiyang Township, Jinning District, Kunming City, Yunnan**

Project Nature: Earth Building

Teams: CUHK & Kunming University of Science and Technology

Project Duration: Jun 2019 – Jan 2020

Dahei New Village is located on the southwest side of Xiyang Township. It is a small village with a population of 65 Yi people (19 households).

Since the team has completed the two phases of anti-seismic rammed earth construction project in Dabaiyi Village successfully, the Xiyang Township government wants the team to widely promote such construction technology to other areas in the township. In view of the soil we find in Dahei New Village is suitable for pure earth construction, the team plans to choose Dahei New Village as a pilot project in the rural areas of Southwest China to apply pure earth construction technology and practical experience which gained from the construction of earth building research and development centre located in the campus of Kunming University of Science and Technology to the project. It will also be taken as a demonstration for rebuilding the whole village in future. After completion of the project, the team hopes to further study on application and impacts of pure earth construction and rammed-earth construction in Southwest rural areas.

In June this year, the team obtained a verbal agreement with the township government that they decided to rebuild a multi-purpose community hall by using anti-seismic rammed-earth construction method. Cracks are found on the walls and floor due to different levels of land subsidence. There is a safety threat when the villagers gather for daily activities in the hall. The team plans to officially launch the project in October 2019.

Site Location: **Hetaoping Village, Miyi County, Panzhihua City, Sichuan, Yunnan**

Project Nature: Earth Building

Teams: CUHK, Tongji University & Kunming University of Science and Technology

Project Duration: Oct 2018 – Aug 2019

In 2018, Departments of Housing and Urban-Rural Development of Sichuan Province planned to compile “The Technical Regulations for Modern Earth Building in Rural Areas of Sichuan Province” and selected three sites as demonstration projects for modern earth building in Sichuan. A group of seven households in Hetaoping Village is the largest project among them.

The student team from the College of Architecture and Urban Planning of Tongji University participated in the project including investigation, architectural design planning, site supervision and management as well. It was a good learning experience for them to understand the entire process from design to completion of the construction.

In October 2018, the team began to demolish the houses and carried out the foundation work. Seven households selected for the rebuilding project were required to put two labours each into the construction. It was not only reduce the labour cost, but also improve the relationship between the villagers. During the process, three experienced senior artisans stayed in the village and provided technical guidance to the villagers. The project was completed by the end of September 2019 and the households moved into new houses gradually.

Meanwhile, this demonstration house project will be featured in one of the episodes in documentary *Reinventing Hometown*. The documentary team will record all aspects of investigation, design communication, house demolition, construction, interior work of the project to show safety construction at low cost and retain architecture characteristics by using traditional technology and local manpower. The documentary is expected to be aired by the end of 2019.

Site Location: **Binggu Township & Deshi Township, Miyi County, Panzhihua City, Sichuan, Yunnan**

Project Nature: Earth Building

Teams: CUHK & Kunming University of Science and Technology

Project Duration: Mar 2019 – Jul 2019

As Sichuan Province is in the earthquake zone, the officials of Miyi County have a strong interest in learning more about seismic rammed-earch construction technology. They visited 1U1V earth house project sites several times and planned to promote this construction technology in its jurisdiction. In addition, there are more than 1,000 Yi immigrants in Miyi County, many of them are living in remote mountainous towns and villages. Most of their houses were purchased from local Han people. Due to their economic condition and cultural level, they don't have experience in building houses. Thus, the earth houses there were in poor condition and the structure was damaged.

The Miyi County Housing and Urban-rural Bureau has decided to solve the housing problem of this group of Yi immigrants, and has taken anti-seismic rammed-earth villlage house building as an important development direction. Now the Suganri household from Binggu Township and Puxifa household from Deshi Township are chosen as the demonstration projects in the regions. Hoping such construction technology can be extended to a wider range. In addition, women's construction team from Binggu Township will be trained to learn the anti-seismic rammed earth construction methods.

Binggu project:







Deshi project:







Site Location: **Dashuijing Village, Fumin County, Kunming City, Yunnan**

Project Nature: Earth Building

Teams: CUHK, KMUST & Habitat for Humanity China

Project Duration: Oct 2019 – Dec 2019 (1st Phase project)

This village house project is the first collaboration project between 1U1V and Habitat for Humanity China. Habitat for Humanity is committed to improving the living environment of the villagers and solving their housing needs, and providing support for the villagers to build houses. In the past projects, they provided financial subsidies to the villagers who built their houses by themselves. Now, they want to apply 1U1V's building technology and tools on this project. Meanwhile, 1U1V and Habitat for Humanity jointly provide financial subsidies to the villagers and technical advice on anti-seismic rammed earth construction. The training and learning process during the construction will help to further promote such new builidng technologies in the region.

Dashuijing Village is located in the mountainous area on the north side of Kunming City. Transportation is inconvenient. In the village, the old houses are broken with poor condition mainly built by rammed earth with wooden structure. Same as other rural villages, new houses are built by brick and concrete.

The first phase project is the reconstruction work for three village houses (two on new sites, one on original site). It is expected to launch in October 2019 and to be completed in February 2020.

Site Location: Liangshui Village / Liangqiao Village, Chongqing

Project Nature: Bridge Building Programme

Teams: CUHK & Chongqing Jiaotong University

Project Duration: Sep 2018 – Sep 2019

The team has been striving to find the sites with bridge building needs. In October 2018, The team successfully built a 12-meter-long steel bridge for Liangshui Village, Chongqing and a 12-meter-long bamboo bridge for Liangqiao Village, Chongqing in October 2018 and July 2019 respectively to benefit about 2,500 local villagers and solve their problems in crossing the river. In addition, a bamboo bridge project in Fangniuping Village, Chongqing is expected to be completed in October this year.

The team carried out the research on componentization and modularization for bamboo structural construction to reduce the construction time. Through continuous tests, construction methods of dome structure, truss structure and beam & column structure are practised. Meanwhile, anti-seismic housing with bamboo structure is an important study because bamboo is degradable waste with anti-seismic characteristics. The study will focus on single residential building made by bamboo with two layers of beam and column structure and modules which are prefabricated and assembled on-site. After a trial run, it proves that such prefabricated bamboo construction system performs high effective. Its construction time is only six hours and it is fully compliant with rapid assembly requirement.

Dome structure

Truss structure

Beam & column structure

Location: **Kunming City, Yunnan**

Project Nature: Earth Building Research & Development Centre

Teams: CUHK, KMUST & Atelier [tǔmù] studio（France）

Project Duration: Dec 2017 – Sep 2019

Until September this year, the construction and interior work of the Centre has been almost completed. The Centre can be put into use and called “The Research and Development Centre for Rural Vitalization in Yunnan”. From design to construction, the Centre is a big “tool” for research, practice, learning and training. The team tried to explore a lot of new techniques and methods, conduct materials tests and train batches of artisans. In near future, the team will continue to study rural vitalization development, adopt scientific and rigorous attitude, respect traditional culture and villagers’ lifestyle, and carry out the inheritance and innovation of the construction technology of the local materials. In order to accumulate experience and achievements, the Centre will be a base for research, training, exchange and development of rural construction technology.

Planning Ahead

Project Status

Earth building project : According to the current rural development situation, our target projects may be the village groups of 4-6 households distributed in in Yunnan and Sichuan. We will mainly provide artisan training, equipment and on-site technical guidance support in these projects. Also, incentive can be given to the households participating in the projects according to their performance during the construction process. The team will continue to promote anti-seismic construction technology and aim to improve rural housing conditions and enhance its living environment.

Bamboo structural project: Using the research results and practice these past years, the 1U1V team has also been trying to apply bamboo materials to rooftop structural architecture and an anti-seismic bamboo structural village house. Examples include the bamboo rooftop structure for the 1U1V Earth Building Research Centre in Kunming and the bamboo truss arch structure for the INBAR Pavilion located in the International Horticultural Exhibition 2019, Beijing, which was known as the “Bamboo Eye” of the exhibition. The team will further study the key technologies of design and construction of long-span bamboo structures, improve their durability, and make the modern bamboo structure more widely used in rural construction, urban public buildings and other fields. The hope is that it can be promoted all over the world.

Promotion & Publicity

Awards

The rebuilding assistance programme in Guangming Village of Yunnan and Yi Xin Qiao bridge project launched by 1U1V won several local and overseas award as listed below:

- Gold Award - Residential category at HKIA Cross-Strait Architectural Design Awards 2019
- Bronze Award of World Pedestrian Bridge Awards 2019
- Jury’s Award of Sustainable Achievement of RICS Award China 2019
- Special Contribution Award for Bamboo Architecture at the 1st Global Bamboo and Rattan Congress

Exhibitions:

In order to promote new anti-seismic rammed earth construction technology and 1U1V work, the team not only published journal articles, but also participate in the following exhibition events:

- Green and Sustainable Practice of Architecture in Asia, ARCASIA Committee on Green & Sustainable Architecture, 10-14 September 2018, Tokyo Japan
- "China, building heritage" Archipel Centre De Culture Urbaine, 4 September - 9 December 2018, Lyon France
- "The Incredible Bamboo, Wood and Paper", Hong Kong Design Centre, 20 July to 9 September 2019, Hong Kong
- The 1st Sustainable and Creative Villagers Research Network – SW China publication and exhibition – Examples of Best Practice, Sustainable and Creative Villagers Research Network, October-December 2019, Huddersfield, UK

In addition, PhD student Changzhuan SHAO was invited to give a TED talk at "YiXi" on 27 September, 2019 to share the bamboo architecture work (https://mp.weixin.qq.com/s/YKe4DawuHBIYjaVRDPd6RQ).

Others

1U1V Scholarship Programme

To support rural youth to continue to receive higher education, 1U1V has launched a scholarship programme since 2019 to grant scholarships to artisan's children and support them to study in tertiary institution and learn what they are interested in. Lin Yougang's daughter who is the first person to receive the scholarship admits into Sociology programme at Gannan Normal University with her excellent academic results. The scholarship is used to pay for all tuition fees and some living allowances to support her in completing her studies.

Women Construction Team

During the past few years, the team found that a large number of young people from rural areas went out for work. Only women, children and the elderly stayed in the village. Manpower shortage in the village have become a problem that hinder the rural development. At the same time, the team also observed that the female trained workers who involved in the past construction projects, performed good soil mixing and construction skills. They are responsible and hardworking. Some of them process good learning ability and communication skill. Since 2019, the team has undergone a series of technical improvements, for instance, usage of simple construction machinery and hand tools for female workers who can complete soil delivery, soil mixture and other building work. As a result, the first women construction team led by a female leader was successfully organized. In July 2019, this women construction team took only two months to complete independently the rammed earth building project in Binggu Township, Sichuan and met fully the building quality as required. It proves that these women team members process good adaptability. They can not only ease the manpower shortage problem, but also show their enthusiasm and ability to gain more income and confidence.

Contact:

Contact person: Dr Wan Li
Address: Rm 505, School of Architecture, Lee Shau Kee Architecture Building,
The Chinese University of Hong Kong, Shatin, NT, Hong Kong.
Tel: (852) 3943 9428
E-mail: 1u1v@cuhk.edu.hk