Collaborative Research on Static as well as Dynamic Performance of Taiwanese Traditional Timber Frame Structures

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On the end of March in 2010, a MOU between College of Planning and Design, National Cheng Kung University (NCKU), Taiwan and RISH, Kyoto University, Japan was concluded. As a symbolic gift from NCKU for this MOU conclusion, two types of Taiwanese traditional wooden frame specimens were presented due to the courtesy of Professor Min-fu Hsu who is a key person for this MOU and has stayed in RISH for three months as an invited professor. On accepting these precious presents, we conducted static push-pull cyclic lateral mixed with constant vertical loading test on these traditional partial full-scale timber frame specimens and also did a shaking table test on Taiwanese Kumimono-complex to make the mechanical behaviors of Taiwanese traditional timber structure more clear. Figure 1 shows the test set-up of Taiwanese traditional timber frame specimen made of Taiwanese Hinoki which was originally collected from part of the "Doorway Hall" of the "Ancestral Hall" for Chung Family at Ping-tung County in South of Taiwan. In addition to this, one more replica specimen made of Taiwanese Cedar was newly built and tested. Figure 2 indicates load-deflection relationship of these two specimens. From these hysteresis loops, it is clear that they behaved in the same manner as Japanese traditional frame structure in which the effect of "thick column-restoring force" took important roles.

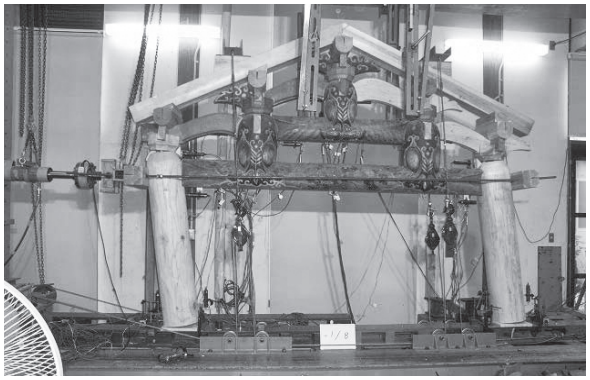

Fig.1 Test set-up of Taiwanese frame specimen.

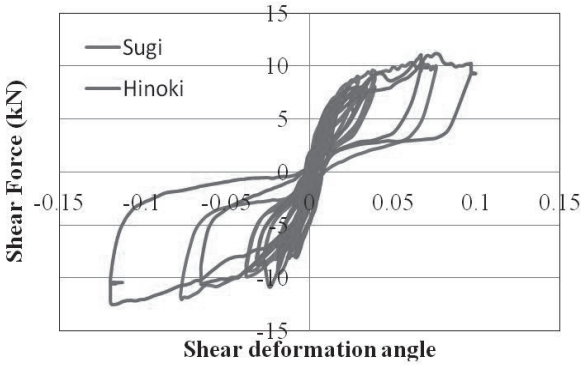

Fig.2 Load-deflection relationships.

Figure 3 shows a shaking table test on a Kumimono-complex taken from another Taiwanese traditional timber structure in Taiwan and was transported from NCKU for our collaboration research activity. This dynamic test was conducted at Chubu University as a part of another collaborative research of three institutes, namely RISH, NCKU and Chubu University.

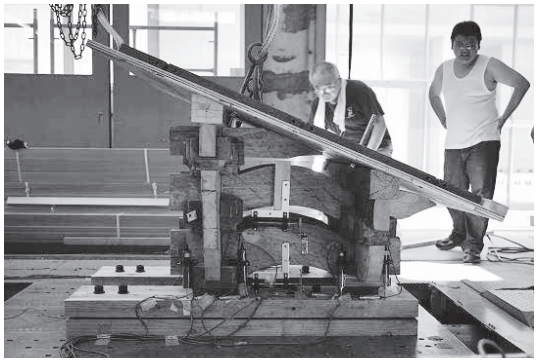

Fig.3 A partial full-scale Kumimono-complex specimen put on the shaking table equipment.

Acknowledgment :

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