Study on Development of Design Method for Traditional Wooden Buildings Based on Structural Details

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【Outline of survey】

There are urgent problems to ensure the seismic safety of existing traditional wooden buildings against severe earthquakes and there are also many social needs to construct newly traditional wooden buildings. This study aims to develop a reasonable structural design method and seismic reinforcement design method of traditional wooden buildings with high seismic performance as well as a design method of structural details such as wooden joints and connections by taking advantage of excellent techniques for traditional wooden works.

First, First, structural mechanisms of traditional wooden joints and connections and restoring force mechanisms are made clear experimentally and theoretically. The analytical method of traditional structural details is then proposed. The traditional wooden buildings are constructed by using traditional specifications for wooden column and floor. The effects of traditional specifications on seismic behavior and seismic performance of wooden buildings are investigated. Finally, a structural design method of traditional wooden details and the seismic design method and seismic reinforcement design method of whole wooden buildings are developed, and a practical manual of design method for traditional wooden buildings is proposed.

【Expected results】

In this study, the structural mechanism of traditional structural details such as wooden joints and connections is made clear. This breakthrough is very essential for the restructure of wooden structural mechanics and makes it possible to propose a structural design method of wooden buildings with high seismic performance as well as traditional wooden details. By using the proposed design method, the structural design of traditional wooden buildings is made easy, and it leads then to the revival of traditional wooden buildings. It is emphasized that the proposed design method is also applicable to modern wooden buildings. By proposing a practical manual of design method for traditional wooden buildings, the design method will be widely used by professionals such as designers and carpenters

【References by the principal investigator】

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【Term of project】 FY2007－2011

【Budget allocation】 16,100,000 yen

(2007 direct cost)

【Homepage address】 http://zeisei5.dpri.kyoto-u.ac.jp/index.html