木構造建築物高度、樓層數相關設計規定檢討研究

Investigation of Design and Building Codes regarding Height and Story of Wooden Building

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摘要

近年來先進國家在木構造施工技術上之發展迅速，新型態的木質構材（例如工程用膠合材、定向粒片板、與直交集成板等)亦開始廣泛運用。受惠於技術與材料進步，現今木構造可達到的高度與規模已非以往木構造可比擬。然因近年來木構造建築技術發展迅速，前述成果已無法滿足目前業界需求，因此現行法規實有繼續檢討之必要。本研究透過資料及文獻回顧來進行美、日、台木構造法規比較與研析，了解其中之差異，以利進行修訂；統整各國之木構造法規並以其為參考依據，研擬本土型之法規修改草案。邀請專家學者針對本案所提出之法規修正建議進行座談以檢討相關建議之合理性。具體研究成果為針對建築技術規則建議修改條文、針對混合構造之規定，建議進行修訂木構造建築物設計及施工技術規範第 7 章，並新增章節 7.5 暫定北美木構造設計法。針對直交集成板 CLT 之規定，建議於木構造建築物設計及施工技術規範中，新增直交集成板 CLT 之專章。

關鍵詞：建築高度、樓層數、北美木構造、直交集成板

Abstract

Construction of high-rise timber buildings has been proposed worldwide due to the development and advanced application of engineered wood. In Japan, Australia, and all over Europe, engineers are using more wood to reduce the high greenhouse gas emissions during concrete construction. New wood engineering technology makes it’s possible to create wooden panels or structure components that can approximate the strength of steel. And the hybrid structure system mixing with wood and non-wood becomes popular due to the efficient utilization of different construction materials based on their major properties.

In Taiwan, the current building regulation governs the height of wooden buildings within 4 story or 14 meters, which limit the potential development of high-rise wooden buildings. Moreover, the seismic design values such as ductility values, load combinations for different structure system vary, making it difficult to design a wooden based hybrid structure system

according to the current building codes. In this study, a comprehensive research regarding the height of wooden building, the seismic design values and material standard are referred based on the literature review, in order to compared the difference of the building code related to construction of wooden buildings between Taiwan and other countries, majorly North American, Europe and Japan. A conclusion and proposed revision to the current building code related to wooden construction are made in this study.

Keywords：building height, building code, IBC, Cross Laminated Timber