



Lateral Behavior Of Post-Tensioned Cross Laminated Timber Walls Using Finite Element Analysis

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Summary:

Cross laminated timber (CLT) has been rapidly developed and utilized for multi-rise constructions in recent years, even high-rise CLT buildings with 40 stories have been proposed and designed. A use of unbonded post-tensioning (PT) steel bars through over CLT walls of the high-rise CLT buildings to take up the tensile forces produced by wind load has been considered, following the regulations of unbonded post-tensioned (UPT) concrete walls. This paper introduces a finite element model to simulate the nonlinear lateral load behavior of the UPT high-rise CLT buildings with elastic connections between the CLT elements. The analysis results indicate that the unbonded PT bars can effectively reduce the lateral displacement of the high-rise CLT building. While compared with a theoretical full rigid CLT model, the advanced model is found to be more accurate for estimating the response of UPT high-rise CLT building under horizontal load.

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Resource Link

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