

Shear Performance Experiment and FEM Analysis Evaluation of RC Columns Reinforced FRP Panels without Adhesive

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Extended Abstract

In Korea, the rate of deterioration of urban living houses built in the 1970s due to rapid urbanization is increasing. As a result, the main member of the structure is caused to collapse and serious damage due to the decrease in bearing capacity. In recent years, vertical loads reinforcement is actively implemented by evaluating the stability of aging urban living houses [1]. Reinforcement methods include cross-section enlargement, steel plate reinforcement, and FRP panels. FRP panels are widely used because cross-section enlargement and steel plate reinforcement increase the weight of the structure [2-4]. On the other hand, FRP panels are vulnerable to fire because the critical temperature, which is reduced to less than 50% of the material strength, is significantly lower at 250°C. [2,5]. Therefore, vertical reinforcement of urban living houses must ensure a fire resistance time of one hour, so we are trying to confirm the fire resistance performance of the FRP panel reinforced piloti column. In this study, to confirm the temperature distribution of the FRP panel reinforced piloti column cross-section exposed to the standard fire, six test specimens were prepared and non-loading fire tests were conducted. To confirm the effect of FRP panel type (e.g., Carbon fiber panel, Basalt fiber panel, Quasi-noncombustible panel, Ultra-high strength panel) and spray thickness (0, 15, 30mm) on piloti column under standard fire exposure for 1 hour.

References

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