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Finite Element Analysis of RC Frames with Retrofitted Infill Walls

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Abstract : The evaluation of performance of infilled reinforced concrete (RC) frames has been a significant challenge for engineers. The strengthening of infill walls has been an important concern to enhance the behavior of RC infilled frames. The aim of this study is to investigate the behaviour of retrofitted infill walls of RC frames using finite element analysis. For this purpose, a one storey, one bay infilled and strengthened infilled RC frame which have the same geometry and material properties with the frames tested in laboratory are modelled using different analytical approaches. A fibrous material is used to strengthen infill walls and frame. As a consequence, the results of the finite element analysis were evaluated of whether these analytical approaches estimate the behavior or not. To model the infilled and strengthened infilled RC frames, a finite element program ABAQUS is used. Finally, data obtained from the nonlinear finite element analysis is compared with the experimental results.

Keywords : finite element analysis, infilled RC frames, infill wall, strengthening
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