

Studying the Theoretical and Laboratory Design of a Concrete Frame and Optimizing Its Design for Impact and Earthquake Resistance

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Abstract : This paper includes experimental results and analytical studies about increasing resistance of single-span reinforced concreted frames against impact factor and their modeling according to optimization methods and optimizing the behavior of these frames under impact loads. During this study, about 30 designs for different frames were modeled and made using specialized software like ANSYS and Sap and their behavior were examined under variable impacts. Then suitable strategies were offered for frames in terms of concrete mixing in order to optimize frame modeling. To reduce the weight of the frames, we had to use fine-grained stones. After designing about eight types of frames for each type of frames, three samples were designed with the aim of controlling the impact strength parameters, and a good shape of the frame was created for the impact resistance, which was a solid frame with muscular legs, and as a bond away from each other as much as possible with a 3 degree gradient in the upper part of the beam

Keywords : optimization, reinforced concrete, optimization methods, impact load, earthquake

Conference Title : ICACEE 2018 : International Conference on Advances in Civil and Environmental Engineering

Conference Location : Rome, Italy

Conference Dates : July 23-24, 2018