

Evaluating the Influence of Concrete Block Infill Panels on Seismic Performance of RC Frames

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Structures with infill walls are very common in many countries. Over the years it has been observed that the presence of masonry walls play an important role to resist the lateral loads due to high stiffness and strength in the reinforced concrete frame buildings. However, in most cases, the contribution of stiffness and strength due to presence of infill panels is not incorporated in the design process. Moreover, most of the countries do not specify the modeling, design and assessment procedures in their codes. In the absence of code requirements, there is a need to develop a realistic approach towards performance of masonry infill walls against the lateral loads. Moreover, it is noted that the influence of masonry on RC frames may be vary significantly due to different types of masonry used in different parts of world. A significant amount of work has been conducted to evaluate the lateral stiffness of RC frame with infill panel used in US and Europe. However, there is a lack of work in this area of research in Pakistan. Therefore, the main goal of this study is to evaluate the characteristics of concrete infill panels and their influence on the behavior of RC frame subjected to lateral loading so that simple analytical technique can be developed for structural designers for Pakistan region. To this end, various experimental tests shall be performed to obtain mechanical properties of the masonry infill using direct compression test, direct shear test and diagonal compression test. Subsequently, a full scale RC frame with concrete block infill will be tested for lateral loading to investigate the behavior of RC frame. Finally, the comparative analysis between experimental results of in-filled RC frame and analytical modeling will be conducted.



Picture 1: Compression Testing Machine



Picture 2: Universal Testing Machine