

## Evaluation of the Need for Seismic Retrofitting of the Foundation of a Five Story Steel Building Because of Adding of a New Story

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**Abstract :** Every year in different points of the world it occurs with different strengths and thousands of people lose their lives because of this natural phenomenon. One of the reasons for destruction of buildings because of earthquake in addition to the passing of time and the effect of environmental conditions and the wearing-out of a building is changing the uses of the building and change the structure and skeleton of the building. A large number of structures that are located in earthquake bearing areas have been designed according to the old quake design regulations which are out dated. In addition, many of the major earthquakes which have occurred in recent years, emphasize retrofitting to decrease the dangers of quakes. Retrofitting structural quakes available is one of the most effective methods for reducing dangers and compensating lack of resistance caused by the weaknesses existing. In this article the foundation of a five-floor steel building with the moment frame system has been evaluated for quakes and the effect of adding a floor to this five-floor steel building has been evaluated and analyzed. The considered building is with a metallic skeleton and a piled roof and clayed block which after addition of a floor has increased to a six-floor foundation of 1416 square meters, and the height of the sixth floor from ground state has increased 18.95 meters. After analysis of the foundation model, the behavior of the soil under the foundation and also the behavior of the body or element of the foundation has been evaluated and the model of the foundation and its type of change in form and the amount of stress of the soil under the foundation for some of the composition has been determined many times in the SAFE software modeling and finally the need for retrofitting of the building's foundation has been determined.

**Keywords :** seismic, rehabilitation, steel building, foundation

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