

Seismic evaluation and retrofitting of an existing building using pushover analysis

Student Name: Nasser Nassar

ABSTRACT

Current seismic design process followed in the world is still governed by force-based design principles. However, the appearance of performance-based seismic engineering has resulted in increasing use of nonlinear methods to predict the required seismic needs in a reinforced concrete structure. A famous and widely used method to establish these needs is a “pushover” analysis in which a mathematical model tool of the building is subjected to an inverted triangular distribution of lateral forces. While this load distribution is based on the assumption that the response is mainly in its fundamental mode of vibration, it can lead to incorrect estimates for structures with significant higher mode contributions. In this study, a 2-D frame RC building has been evaluated for the seismic load in order to decide if there is a need for strengthening it using retrofitting methods. The seismic evaluation is was conducted also after the application of the Jacketing to some structural members, it was found that the building fulfilled its seismic design criteria.