Fayoum University Faculty of Engineering Engineering Mathematics and Physics Department



Title of thesis: Mathematical Formulas for Estimating Fundamental Time Period of Vibrating Shear Walls Structures

ABSTRACT

Multistory shear wall (SW) buildings are nowadays one of the most prevalent types of structures around the world. Most of residential and commercial buildings not only in Egyptian cities but also in villages are the type of multistory SW buildings. It is essential to design such buildings to withstand earthquake excitation so that it seems necessary to estimate the dynamic properties of these structures to simulate the dynamic responselt. The most important property that affects the dynamic response of buildings is the vibration time period (T). All of the building codes provide height dependent formulas to estimate the value of fundamental time period. Also, many researchers devoted their efforts to propose enhanced formulas using regression analysis for estimating T. This thesis targets to propose mathematical formulas for estimating the vibration periods of reinforced concrete SW buildings. Moreover, this research aims to study the effect of various parameters (building height, concrete compressive strength, lateral stiffness, etc.) on the values of vibration periods of reinforced concrete SW buildings. The values of the vibration periods are necessary for designing new buildings and assessing existing ones.