ENERGY DISSIPATION IN LOW STRENGTH CONCRETE BRIDGE COLUMNS

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ABSTRACT

Low strength concrete is seen in many bridges in developing countries like Pakistan. The high seismic demand warrants investigation to see how such bridges would dissipate energy in extreme loading that may occur due to earthquakes. Two scaled bridge columns were fabricated with target strength of 2,400 psi. The columns were tested by subjecting them to reverse cyclic quasi-static loading. Load and displacement data was recorded which was then used to plot the hysteretic curves. The amount of energy that dissipated in every cycle and cumulative energy dissipation for each column was calculated. This experimental study provided high value results regarding the energy dissipation and the ultimate displacement capacity. Further, number of cyclic loading also affects the amount of energy dissipated and maximum displacement of column.

KEY WORDS: Energy, Dissipation, Hysteresis, Bridge Column, Quasi-Static Loading.