

# Performance of Template School Buildings during Earthquakes in Turkey and Peru

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**Abstract:** Most of the public school buildings in Turkey and Peru are built according to a small number of template plans. Over the years, these template plans are kept the same while the structural designs are varied with the seismic design codes in force. During recent strong earthquakes in Turkey and Peru, the design concepts and construction styles for these template school buildings have been put to test. In this paper, observed earthquake performances of template reinforced concrete school buildings with moment-frames or moment-frames and shear walls are compared. The comparison reveals choices in design that were successful as well as those that were not. The disastrous results of “*captive columns*” are demonstrated. Illustrations are given from what has been observed in recent earthquakes in these seismically active countries. It is shown that since 1997 the Peruvian practice has been producing school buildings that perform well during strong earthquakes.

**CE Database subject headings:** Seismic design; earthquake resistant structures; damage prevention; structural safety; structural failures; reinforced concrete columns.

## Introduction

The design and construction process for school buildings owned by the government is well set: their design is carried out by a government agency and reviewed by government/local authority engineers. The construction economics are known through experience and the accountability is towards a body that holds state power; and, more importantly, the enforcement of proper construction practices is expected to

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