

The Sterling Report

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Earthquake paranoia has recently spread through North America.

The Bay area earthquake that shook the World Series of 1989 and its many after-shocks, took the headlines and demonstrated how fragile many of our structures are when faced with environmental disaster. Crystal ball gazers and earthquake prophets have now demonstrated that mere prediction of an earthquake can achieve headlines. It is no wonder that our municipal and provincial governments are reacting under such stresses, but is it over-reaction?

British Columbia municipalities are currently establishing updated seismic control programmes. These programmes can require the seismic upgrading of both new and old existing buildings

throughout the province, but especially in metropolitan centres of Vancouver and Victoria, with their larger populations and building stock.

Cost estimates vary widely, however current seismic code enforcement could result in total upgrading expenses approaching \$100 per square foot. These costs may well outweigh the economic value of many existing buildings. As many of these existing buildings are apartment properties, the result could be a substantial reduction in already scarce rental accommodations. If these more stringent regulations are required to protect life, then by all means, they must be implemented, however, are they really necessary?

One important question that local regulators must answer is whether or not there is a true likelihood of a damaging

quake ever occurring in a population centre of B.C.

The next question is to decide what regulations are required? Computer models and analytical frameworks simulating earthquake damage are major determinants used to evaluate which buildings are not to code, and what the final costs will be to bring them to code. Unfortunately, the seismic damage computer models used in British Columbia were not designed with specific regard to existing buildings. Rather, they were intended to be used for the design of new buildings. These models also include little consideration for site specific factors such as surface geomorphology, subsurface geology, and orientation to the most probable earthquake epicenters. As a consequence of these shortcomings, current seismic evaluations tend to under-estimate survival rates of existing buildings and over-estimate upgrading and modification requirements, thereby increasing their costs.

Earthquake preparedness is important for the building community, however we must respond to the real risks rather than those created by paranoia, rumour, and incomplete information. **R2**