

MATRIX SEISMIC GROUP CORP.

The Official Newsletter of Matrix Seismic Group Corp.



Earthquake Insurance

by Behruz Vahdani. President

If you live in an area prone to seismic activities not only should you protect your safety but also you should protect your property either as a main residence or as an investment. When it comes to safeguarding the property against any damages caused by a major earthquake, earthquake insurance comes into the picture. The question becomes, is the earthquake insurance worth it or not? Any structure which was built prior to 1976 is not designed for handling seismic forces. The earthquake equations were introduced into building codes and adopted by states, counties and cities after 1976. The seismic design by structural engineers either as a retrofit or a new building has nothing to do with what the insurance companies, banks and lenders want. What triggers the request by these agencies to get earthquake insurance is a simple number. This number indicates as PML (Probability Maximum Loss) or SEL (Scenario Expected Loss). The SEL is one.....

**HERE'S WHAT YOU
SHOULD KNOW:**

- *Earthquake Insurance*
- *Innovative Design Approach*



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Innovative Design Approach

Matrix Seismic Group Corp. can address all your concerns about different methods of design by utilizing a new design approach to strengthen your structures such as Soft Story, Un-reinforced Masonry, Non-Ductile Concrete, Retaining wall, pile, bridge, seawall, etc.

Matrix Seismic Group Corp. & Matrix Marine, LLC can evaluate the structural conditions of your Non-Ductile, UMB, Soft Story buildings in a timely manor .

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way to express the PML value. The SEL is the expected average damage of a building during a seismic event. These numbers are between 0 to 1. **The magic number is 0.20.** Any number above 0.20 is considered by these agencies that the structure is required to have earthquake insurance. The PML report is usually prepared by a licensee engineer. The method for calculating PML (SEL) number is relying on the guidelines by ASTM, ASCE7 or using an estimated formula introduced by Charles C. Theil & Theodor C. Zsutty many years ago. When you compare two or three reports for the same building you will find that their numbers are sometimes not the same. This is due to the fact that it is the opinion of the engineer who decides on the evaluation and preparation of the results. Why is this magic number 0.20 since it is not an engineering number? You may think it is created from thin air but let's look at the loan. Most common property loans are structured based on 80% loan and 20% down payment. In the case of a major earthquake the industry does not want the damage to the building to be greater than 20% of what the building is worth. This way the agency's money is protected. The 20% (0.20) is the amount which was the down payment. The question arises, is it worth it to buy earthquake insurance? If the property is subject to earthquake retrofitting by an ordinance from government agencies for public safety, the owner needs to seismic retrofit the structure to the minimum allowable code guidelines. Otherwise the owner will be charged with negligence in case of loss of life or public injuries. By upgrading the building for an earthquake the PML (SEL) will be lower, but not necessarily below 0.20. If the property is not subject to a public safety ordinance, then the owner should consider doing a minimum **voluntary** retrofitting instead of taking earthquake insurance. Most times the premiums are too expensive, the deductibles too high, and the cost of retrofitting will be less than two to three years of the insurance premium. Please remember in the event of a major earthquake most of the insurance agencies will go belly up and file for bankruptcy.