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### Seismic Resistant of Structures by Elastic Materials (Nickel titanium & crushed scrap tire rubber)

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**Abstract:**A large majority of structures and bridges are made of steel and concrete. While this combination is convenient and economical, steel-concrete structures and bridges don't hold up as well in strong earthquakes (7.0 magnitude or higher). Conventional reinforced columns rely on the steel and concrete to dissipate energy during strong earthquakes, potentially creating permanent deformation and damage in the column and making the column unusable. Under earthquake loading, engineers allow for damage in column hinges to dissipate energy and prevent total bridge collapse. While that practice is widely accepted, the effects of hinge damage can interfere with disaster recovery operations and have a major economic impact on the community. We have identified several smart materials and partially or fully replacement in reinforced concrete structures & bridges. We are going to use inelastic building materials, which are most earthquake resistant. This means that, it can absorb the stress imposed by an earthquake and return to its original shape. The inelastic building materials such as crushed scrap tire rubber, Nickel titanium, or nitinol, glass and carbon fiber-reinforced polymer composites were used.

**Keywords:** waste-tire rubber, concrete, compression, coarse aggregate, fine aggregate.

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