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DYNAMIC BUCKLING OF STEEL WATER TANK UNDER SEISMIC LOADING

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ABSTRACT

Many above-ground steel liquid storage tanks have suffered significant damages during past earthquakes. Such failures are due to several causes. The most common one is dynamic buckling. Several theoretical and experimental research studies were performed without solving this complex problem completely. The damages caused to these structures made them generally out of service. The emergency operations after an earthquake will be then particularly handicapped. These damages can also cause uncontrolled fires or environmental contamination in the case of flammable or toxic contents. Several analytical, experimental and numerical studies have been carried out to highlight the complexities associated with the behavior of liquid storage tanks against the dynamic buckling. This paper attempt to create a three dimensional finite element model of the steel tank to predict the performance under lateral loading.

KEYWORDS: Dynamic Analysis, Frequency, Water Tank