عنوان مقاله:

Low-cycle fatigue effects on lifetime of circular bridges piers considering rocking-enable shallow foundation

محل انتشار:

سومین کنفرانس بین المللی پژوهش های کاربردی در مهندسی سازه و مدیریت ساخت (سال: 1398)

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خلاصه مقاله:

Cyclic loading during large earthquakes induces low-cycle high-amplitude strain in longitudinal bar of bridge column piers. This phenomenon is known as low-cycle fatigue, which reduce design life of column pier due to longitudinal bars fracture. After recent large earthquakes (e.g. Christchurch in 2011), resilience became a public demand instead of conventional design methods. While conventional design methods mostly relay on plastic hinge formation in column pier as an earthquake resistance system (ERS), modern methods try to reduce demands on ERS in order to assure of resilience. Rocking shallow foundation (RSF) is an earthquake demand reduction system. This research demonstrates how RSF, prevent column pier design life reduction due to low-cycle fatigue. The obtained results confirm that RSF needs significantly smaller foundation design moments that could result in avoiding costly pile foundation and more importantly, extend life of column piers more than conventional design strategies.

کلمات کلیدی:

Low-Cycle Fatigue, Buckling, Shallow Foundation, Bridge