

عنوان مقاله:

Interaction of Underground Tunnel and Existing Shallow Foundations Affected by Normal Faults

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خلاصه مقاله:

In major earthquakes, permanent ground deformations due to the fault movements cause serious damage to the foundations and structures. Although many of structural seismic design codes have recommended avoiding the construction of structures in the adjacent to active faults, it is not always a viable option. For example, the lifeline facilities such as gas tunnels, water supply tunnels and transportation tunnels, due to their extensive length, cannot often avoid crossing active faults. Therefore, it is necessary to evaluate the interaction mechanism between structures and fault rupture for effective design to reduce the hazards associated with surface faulting. This study investigates the interactions of underground tunnel and existing shallow foundation affected by normal fault using the finite element method. The results show that the existence of a tunnel changes the fault rupture path and in some cases can increase the foundation rotation. It causes the occurrence of severe level of damage to the structure and increases fear about its instability.

کلمات کلیدی:

Normal fault, Shallow Foundation, Underground tunnel, Interaction

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