

عنوان مقاله:

TSUNAMI HYDRODYNAMIC FORCE ON A BRIDGE, SURVEY AND EXPERIMENTAL STUDIES

محل انتشار:

پنجمین کنفرانس بین المللی زلزله شناسی و مهندسی زلزله (سال: 1386)

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خلاصه مقاله:

The fourth largest earthquake in the world since 1900 happened on December 26, 2004 off the west coast of Northern Sumatra, Indonesia. The resulted huge tsunami damaged North-Western Sumatra region and Indian Ocean rim countries. In a quick response to the disaster, a Japanese group of researchers led by the first author departed to North-Western Sumatra in an attempt to study the lessons. One of the bridges surveyed in March 2005 is Ulee Lheue Bridge in Banda Aceh which is close to the north coast. The bridge is still functioning although some damages were clearly spotted. The tsunami height in this place is estimated as 12 meter. The bridge and its surroundings should have undergone severe hydrodynamic force. The bridge was displaced 35 cm in the upstream direction. Other bridges surveyed in nearby areas showed similar damages or being washed away. Some countermeasures should be made to prevent bridges from being severely displaced or washed away by tsunami water. Experimental tests were carried out to measure the hydrodynamic force, which is a function of bridge shape, water depth, water velocity, and floating debris. Factors responsible for resisting and reducing the hydrodynamic forces for design purposes are also studied.

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