

عنوان مقاله:

Dynamic Response of Bridge-Ship Collision Considering Pile-Soil Interaction

محل انتشار:

ژورنال مهندسی عمران، دوره 3، شماره 10 (سال: 1396)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Hussein Yousif Aziz - PhD, College of Engineering, Muthanna University, Sammawa, Muthanna, Iraq

He Yun Yong - Southwest Jiaotong University, School of civil engineering, Chengdu 610031, Sichuan, China

Baydaa Hussain Maula - Middle Technical University, Institute of Technology, Baghdad, Iraq

خلاصه مقاله:

According to most countries' norms, and to find the effect of the bridge collision the equivalent static method was designed for bridge-ship collision, ignoring the dynamic effects of shocks. It is sharply different from actual situation. So based on the theory of Winkler foundation, shearing strain theory of Timoshenko and potential energy variation functional principle of Hamilton, the simulation models of bridge piers was built considering the pile-soil interaction. Lateral transient vibration equation of bridge piers was concluded. Based on the theory of integral transform, the differential equation of the collision system and the boundary conditions were transformed with Laplace transformation; the analytical solution of the stress wave in frequency domain was concluded. And then the inversion of solution in frequency domain was carried out using Matlab based on the Crump inverse transformation. Finally the dynamic response law of displacement, normal stress and the shear stress of bridge piers were obtained.

کلمات کلیدی:

Pile-Soil Interaction; Bridge Piers; Collide; Crump Inverse Transformation; Dynamics Response

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/803961>

