



Research on the Damage Mechanism of the Soft Mattress

J. Hu¹, S. F. Yang¹, H. J. Zhou¹, Y. K. Chen¹, A. H. Luo², B. D. H. Li²

1. Chongqing Jiaotong University

2. Changjiang Chongqing Waterway Engineering Bureau
Chongqing, China

ABSTRACT

Soft mattress as a common waterway regulation structure, is widely used in channel regulation projects in the middle and lower reaches of Yangtze River. Due to the flow disturbance, the soft mattress is easily destroyed in the form of slipping, floating and tearing. A generalized flume experiment was conducted in this study, the flow structure, motion pattern and the pressure distribution of both sides of the mattress were measured. The control factors as the water depth, velocity, the angle of the guide, and the shape of the bank boundary were investigated based on the experimental data set, the relationship between the sinking process of soft mattress and the control factors were established. The results have shown the damage mechanism of the soft mattress, and some suggestions are proposed to ensure the safety of the soft mattress in the waterway construction.