



**US Army Corps  
of Engineers®**  
Engineer Research and  
Development Center

# Barge Impact Experiments on Flexible Lock Approach Walls

## Description

The purpose of this work unit is to directly quantify the incident load and subsequent dynamic response of a section of flexible lock wall under a series of “usual case,” low-angle barge impacts. The upstream guide wall at Winfield Lock and Dam, Winfield, WV has been selected for these experiments, currently planned for August 2008.



## Issue

No empirical data has ever been collected on the response of a flexible wall system capable of absorbing impact energy during a barge impact. The Corps is developing engineering procedures to perform cost-effective evaluations and designs of lock approach walls at navigation projects. These procedures need realistic barge and vessel impact forces that accurately account for the response of flexible walls that deflect during impact.

## Users

USACE Civil Works Structural Engineering Community

## Products

The primary products of this research will be the demand curves for a range of impact angles and velocities, and the corresponding wall deflection envelopes. An ERDC TR will fully document the project.

## Benefits

The results from these experiments feed directly into the numerical modeling efforts underway in a companion work unit. Upcoming projects such as the flexible approach walls planned for the Upper Mississippi (UM) projects—Lock and Dam (L&D) 22, L&D 25, and L&D 3; and Ohio River Main Stem (ORMS) lock extensions at Greenup and J. T. Myers—for which there is no guidance for impacts with flexible walls will receive the most benefit. Long-range benefits from this research will be in the potential for cost savings designs based on more realistic values for impact loads.



Force measuring bumper used in rigid wall experiments conducted in 1998

## Corps Program

Navigation System Research Program, Mr. James Clausner, Program Manager.

## Point of Contact

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