



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

Fact Sheet

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REMR MANAGEMENT SYSTEM FOR STEEL SHEET PILE STRUCTURES

The Problem

The U.S. Army Corps of Engineers maintains a large number of lock and navigational facilities, many of which are beginning to show signs of weathering and deterioration. Corps managers responsible for maintenance and repair (M&R) of these structures often lack the tools necessary to make informed decisions about project prioritization and efficient allocation of scarce funds.

The Technology

To help those involved in M&R project planning and budgeting for these facilities, the U.S. Army Construction Engineering Research Laboratory (CERL) is developing a Repair, Evaluation, Maintenance, and Rehabilitation (REMR) Management System for steel sheet pile structures. This computerized management system is based on standardized inspection and condition rating procedures. It also includes software for handling and storing data, performing required calculations, and producing a variety of reports for work planning and budgeting purposes.

The management system features a 100-point Condition Index (CI) that rates the structure on physical condition and the extent to which it is performing its intended function (see CERL Fact Sheet CF-22, The Condition Index). This is primarily a planning tool with the index values serving as an indicator of the general condition level of the structure. The index is meant to focus management attention on those structures most likely to warrant immediate repair or further evaluation. In addition, the CI values can be used to monitor changes in general condition over time and can serve as an approximate comparison of the conditions of different structures.

Application of this management system begins with an inspection of steel sheet pile structures according to the standard procedure established for the system. This inspection information is entered into the system to determine a functional CI and a structural CI. The functional CI is based on field measurements and observations of structural defects, including safety and serviceability considerations. The structural CI is a measure of the safety of the structure or its risk of failure and is based directly upon the calculation of a factor of safety of the existing state of the structure. Finally, an overall CI for the whole steel sheet pile structure is determined.

After the overall CI is found, various alternatives are formulated into a set of M&R solutions. The program then provides consequences for these alternatives and performs a life cycle cost analysis for each.

Benefits/Savings

This REMR Management System provides improved and more consistent methods for life cycle cost comparisons of M&R alternatives and a more effective means for monitoring the condition of steel sheet pile structures. The ultimate goal is to achieve the best possible condition for these structures at any funding level.

Status

The REMR Management System for steel sheet pile structures has been tested, validated, and implemented throughout the U.S. Army Corps of Engineers since 1989. Training sessions for Corps personnel have been completed and the program is undergoing updates and revisions as necessary. The most current REMR software is available on the Internet at <http://www.cecercer.army.mil/fl/remr/remr.html>

Point of Contact

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