



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

Innovative Lock Rehabilitation Techniques

Description This work unit develops techniques for assessing the status of damage processes to concrete in navigation structures and for repair concepts that can be executed with minimum service closure are investigated.

Issue Older concrete navigation structures commonly suffer from damaging cycles of freezing and thawing, damaging alkali-aggregate reaction, and accumulated impact damage. Techniques are needed to evaluate the status of damage processes and to stop or at least slow down these processes. Repair techniques need to avoid lock closures because of economic impacts resulting from service interruptions.

Users USACE District Engineers.

Products

- Test methods for estimating status and future potential of damaging alkali-silica reaction and damage due to cycles of freezing and thawing.
- Evaluations of products that purport to restore strength to damaged concrete.
- Revisions to the concrete repair manual.

Benefits More effective estimation of life-cycle costs and extended service life.

Corps Program Navigation Systems Research Program, Mr. James Clausner, Program Manger.

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Partners Geotechnical and Structures Laboratory; Coastal and Hydraulics Laboratory.



Concrete in trunion block damaged from cycles of freezing and thawing. L&D 18 MS River



Cold weather exposure station, Treat Island, ME