CECW-E Engineer Regulation 1110-2-101	Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000	ER 1110-2-101 15 March 1996
	Engineering and Design REPORTING OF EVIDENCE OF DISTRESS OF CIVIL WORKS STRUCTURES	
	Distribution Restriction Statement Approved for public release; distribution is unlimited.	

DEPARTMENT OF THE ARMY
US Army Corps of Engineers
Washington, DC 20314-1000

CECW-E

Regulation
No. 1110-2-101

15 March 1996

Engineering and Design
REPORTING OF EVIDENCE OF DISTRESS OF CIVIL WORKS STRUCTURES

1. Purpose

This regulation prescribes the responsibilities and procedures for the immediate notification to higher authority of evidence of distress or potential failure of civil works projects. These procedures apply to projects under construction or in operation.

2. Applicability

This regulation applies to all HQUSACE/OCE element, major subordinate commands (MSC), districts, and field operating activities (FOA) having civil works responsibilities.

3. References

a. ER 1110-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures.

b. ER 1110-2-1802, Reporting Earthquake Effects.

c. ER 1130-2-320, Equipment Failure and Generation Interruptions, Multiple-Purpose Projects with Power.

4. Discussion

The intent of this regulation is to keep the USACE chain of command informed by ensuring the immediate reporting, inspection, and followup evaluation of conditions that demonstrate evidence of distress or conditions that could result in a potential hazard at civil works projects. Initial reporting should be via telephone with a followup written summary with appropriate photographs.

5. Procedures

Evidence of distress at Corps projects, including those listed in paragraph 6, will be immediately reported to the District Office. The district Dam Safety Officer will confirm the situation and determine if an engineering evaluation of the condition is required and if remedial measures will be required, and will immediately report the conditions, through command channels, to the HQUSACE Dam Safety Officer. If the HQUSACE Dam Safety Officer cannot be contacted, the reporting MSC or field office will follow the notification sequence as outlined in Appendix A. Each USACE Command will also establish procedures for notification of the Division and District Dam Safety Officers and coordination of all information with their counterparts in the Emergency Management element. The HQUSACE Dam Safety Officer will notify the Director of Civil Works and the Commander, USACE.

6. Distress Signals

Typical evidence of distress to be reported is as follows:

a. Sloughs, settlement, or slides in embankments such as earth or rockfill dams, urban levees, and bridge abutments or slopes of spillway, channels, and lock and dam abutments.

b. Evidence of piping, muddy water boils in the areas of a structure such as embankments, abutments, dam monoliths, lock walls, or cofferdams.

c. Abnormal increase or decrease of flow from foundation drains, structural joints, or face drains of concrete dams.

d. Any increase in seepage quantities through or under embankments or in abutments.

e. Any significant change in pore-water

This regulation supersedes ER 1110-2-101, dated 31 January 1993.

pressure in either embankments or their foundations or abutments.

f. Any significant change in uplift pressures under concrete structures.

g. Unusual vertical or horizontal movement or cracking of embankments or abutments.

h. Significant cracking of mass concrete structures, either during construction or after completion.

i. Sinkholes or localized subsidence in the foundation of or adjacent to embankments or other pertinent structures critical to the safe operation of the project.

j. Excessive deflection, displacement, or vibration of concrete structures (e.g., tilting or sliding of intake towers, bridge piers, lock walls, or floodwalls).

k. Erratic movement, binding, excessive deflection, or vibration of outlet and spillway gates and large flow control valves.

l. Significant damage to any structure (e.g., barge damage to bridge piers or lock walls or ice flow damage to intake towers and access bridge piers).

m. Significant damage to, or changes in, structures, foundations, reservoir levels, groundwater conditions, and adjacent terrain as a result of seismic events. Special inspections for damages should be made immediately following the events as described in ER 1110-2-1802.

n. Any other indications of distress or potential failure that could inhibit the operation of a project or endanger life and property.

o. Excessive vibration, binding, unusual noises, movements, or deflections of gate hoist operating equipment.

p. Actual hydraulic equipment operating pressure in excess of 125 percent of the normal operating pressure. Electric motor operating equipment overheating or stalling.

q. Erratic movement or unusual sounds such as bumping, jumping, or popping of lock miter gates.

r. Wire rope lifting cables or lifting chains having broken strands or deformed, worn, or severely corroded links.

s. Frequent power interruptions.

t. Excess movement of penstock flexible couplings.

u. Penstocks or turbine spiral cases that show signs of distress such as deformation or cracking.

v. Failure of major mechanical or electrical equipment at local flood protection projects.

7. Inspections

Special inspections to evaluate damages or changes should be made immediately following any of the events outlined in paragraph 6. This is particularly important in the case of earthquake damage.

8. Reporting Requirements

The requirements for reporting evidence of distress or potential failure as set forth above does not alter the requirements of regulations referenced in paragraph 3.

FOR THE COMMANDER:

ROBERT H. GRIFFIN
Colonel, Corps of Engineers
Chief of Staff

1 Appendix
APP A - HQUSACE Notification Plan

APPENDIX A

HQUSACE Notification Plan

1.	Steven L. Stockton, P.E.	HQUSACE Dam Safety Officer Chairman of the Dam Safety Committee Chief, Engineering Division CECW-E Office: (202) 761-4536 Home: (202) 775-8421
2.	Arthur H. Walz, P.E.	Chief, Geotechnical and Materials Branch CECW-EG Office: (202) 761-8681 Home: (410) 893-3446
3.	Donald Dressler, P.E.	Chief, Structures Branch CECW-ED Office: (202) 761-0220 Home: (703) 904-1752
4.	Robert Kinsel, P.E.	Chief, Electrical & Mechanical Branch CECW-EE Office: (202) 761-8616 Home: (703) 455-2269
5.	Earl E. Eiker, P.E.	Chief, Hydraulics and Hydrology Branch CECW-EH Office: (202) 761-8500 Home: (410) 465-2120
6.	Daniel R. Burns, P.E.	Chief, Operations and Readiness Division CECW-O Office: (202) 761-0196 Home: (703) 313-7660
7.	Allen Hurlocker, P.E. (Acting)	Chief, Construction Branch CECW-OC Office: (202) 761-8831 Home: (703) 878-0704

Listed personnel are also members of the HQUSACE Dam Safety Committee