

LIBRARY COPYRegulation
No. 1110-1-1

1 May 1984

ENGINEERING AND DESIGN

Reporting of Evidence of Distress of Civil Works Projects

1. Purpose. This regulation establishes a guide for the Little Rock District in meeting the requirements of ER 1110-2-101 and SWDR 1110-2-6.
2. Scope. This regulation prescribes the policy and procedures for reporting any evidence of distress or abnormal behavior, unsafe movements, or distress of civil works projects in operation or under construction.
3. Applicability. The provisions of this regulation are applicable to all Little Rock District employees.
4. References.
 - a. ER 1110-2-100, subject: Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures.
 - b. ER 1110-2-101, subject: Reporting of Evidence of Distress of Civil Works Projects.
 - c. ER 1110-2-1802, subject: Reporting Earthquake Effects.
 - d. ER 1130-2-320, subject: Equipment Failure and Transmission System Interruptions, Multiple-Purpose Projects with Power.
 - e. SWDR 1110-2-6, subject: Reporting of Evidence of Distress of Civil Works Projects.
5. Procedure. Evidence of distress of any civil works project will be immediately reported to the Resident Engineer. The Resident Engineer will immediately report this evidence of distress by telephone through the Chief, Construction-Operations Division, to the Dam Safety Officer, Chief, Engineering and Planning Division. An emergency evaluation of the evidence of distress will be made at the District level. When the reports, data, or observations indicate the need for immediate remedial action or potential failure of any structure, the Chief, Engineering and Planning Division, will immediately inform the District Commander, who will inform the Division Commander. When other areas of distress occur which do not require immediate remedial action or constitute a serious potential failure, the Chief, Engineering and Planning Division, District Office, will inform

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the Chief, Engineering and Planning Division, Southwestern Division. The Chief, Construction-Operations Division will also be informed of conclusions and action to be taken.

6. Areas of distress. The following items are considered evidence of distress and will be reported immediately by the procedure described above.

- a. Significant sloughs, settlement, or slides in embankments such as earth or rockfill dams, urban levees, and bridge abutments or in slopes of spillways, channels, locks, and dam abutments.
- b. Evidence of piping muddy water boils in the area of any 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. Abnormal damage to riprap slope and channel protection.
- e. Sudden changes in chemical analyses, temperatures, suspended solids, or turbidity of seepage water.
- f. Any increase in seepage quantities through or under embankments or in abutments.
- g. Any increase or decrease in pore water pressure in either embankments or their foundations.
- h. Abnormal increase or decrease in uplift pressures under concrete structures.
- i. Unusual vertical or horizontal movement or cracking of embankments or abutments.
- j. Significant cracking of mass concrete structures, either during construction or after completion.
- k. Sinkholes or localized subsidence in the foundation of or adjacent to embankments or other structures.
- l. Severe cavitation or erosion damage to control structures after major operation.
- m. Excessive deflection, displacement, or vibration of concrete structures (e.g., tilting or sliding of intake towers, bridge piers, lock walls, floodwalls).

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n. Undermining of abutments, piers, and other support structures due to erosion.

o. Unusual difficulty in operation of gates, valves, and other mechanical equipment.

p. Erratic movement, binding, excessive deflection or vibration of outlet and spillway gates.

q. 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).

r. Significant damage to, or change in, structures, foundations, reservoir levels, ground water conditions, and adjacent terrain as a result of seismic events of local or regional areas. Special inspections of such damages or changes should be made immediately following the events, described in ER 1110-2-1802.

s. Any other evidence of distress or potential failure that could inhibit operation of a project or endanger life or property.

7. Special inspections to evaluate damages or changes should be made immediately following any of the events outlined in paragraph 4. This is particularly important in the case of earthquake damage.

8. Other regulations. The requirement for reporting the evidence of potential failure as set forth above does not alter the inspection requirements of ER 1110-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures or the reporting requirements of ER 1130-2-320, Equipment Failures and Transmission System Interruptions, Multiple-Purpose Projects with Power.

9. Operation and Maintenance Manual. This regulation shall become a part of each project O&M Manual and action will be taken to add it to all existing O&M Manuals.

FOR THE COMMANDER:



JEROME B. SIDIO
Major, Corps of Engineers
Deputy Commander

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EXHIBIT NO. 2
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