

## **Terms of Reference for R&D Project**

*(Hydraulic Structures Instrumentation Sectional Committee, WRD 16, WRD, BIS)*

### **1. Title of the Project: Study on Installation, Commissioning, and Observations of Stress Measuring Devices in Concrete and Masonry Dams**

### **2. Background:**

Stress measuring devices play a pivotal role in monitoring the health and safety of concrete and masonry dams. The structural integrity of these structures is crucial for water resource management, flood control, and energy generation.

IS 14278 deals with “Stress Measuring Device in Concrete and Masonry Dams - Installation, Commissioning and Observations: Code of Practice”. Central Water Commission has created “Guidelines for Instrumentation of Large Dams”.

There is a need for comprehensive study and standardization in their installation, commissioning, and observational practices in view of the advances in technology that have enhanced the capabilities of these devices, especially considering the diverse environmental and structural conditions of dams in India.

### **3. Objective:**

- 3.1 To conduct an in-depth study of the current practices and technologies in the installation, commissioning, and observation of stress-measuring devices in concrete and masonry dams.
- 3.2 To identify best practices and develop standardized procedures that can be applied across various dam types and environmental conditions.
- 3.3 To produce a comprehensive set of recommendations that can be adopted for revision of IS 14278.

### **4. Scope:**

- 4.1 Literature review and analysis of existing practices and technologies in stress measurement in dam structures.
- 4.2 Field studies and case studies on a variety of dam types to understand the practical challenges and adaptability of different devices.
- 4.3 Collaboration with manufacturers, dam engineers, and monitoring experts to gather insights and practical knowledge.

4.4 Development of standardized guidelines for the installation and commissioning of stress-measuring devices.

## **5. Research Methodology (In accordance with Item 4):**

5.1 Comprehensive review of technical literature and existing standards related to stress measurement in dams.

5.2 Field Visit studies and observational research in at least 3 dams to learn about the performance, efficiency, and issues faced with the observation and operation of these devices.

5.3 Manufacturing Facility Visits to at least 3 manufacturers to learn about the best practices regarding installation and observation of these devices.

5.4 Stakeholder Engagement with users, and other stakeholders such as Regulatory bodies, R&D Institutions, and manufacturers, and experts through seminars or webinars for comprehensive information gathering and feedback through a structured questionnaire.

5.5 Compilation of the findings, analysis, and recommendations into a comprehensive report.

## **6. Deliverables (In accordance with Item 4):**

**A comprehensive final report enclosing the following:**

- **Comprehensive Study Report:** A detailed report encompassing all research findings, including reviews of existing literature, guidelines, and standards.
- **Analysis of Manufacturer and Stakeholder Engagement:** Insights gathered from field visits and interactions with manufacturers, users, regulators, and other stakeholders.
- **Comparative Analysis:** A comparative study of various existing and emergent stress measurement technologies and applications, highlighting best practices.

## 7. Timeline and Method of Progress Review:

*(Timeline is from the date of the award of the project)*

<b>S. No.</b>	<b>Stage</b>	<b>Timeline (Cumulative)</b>
1	Report on Literature Review	60 Days
2	Stakeholder Engagement and visit to manufacturer and project sites	120 Days
3	First Draft	135 Days
4	Final Draft along-with report	150 Days

Interim review shall be carried out every 45 days.

## 8. Support from BIS:

BIS will provide access to the latest editions of Indian and International standards for the project.

## 9. Member Secretary & Sectional Committee:

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