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## राष्ट्रीय बांध सुरक्षा प्राधिकरण

## अधिसूचना

नई दिल्ली 24 अप्रैल, 2024

**फा. सं. टीई-32/2/2023- एनडीएसए-एमओडब्ल्यूआर.**—राष्ट्रीय बांध सुरक्षा प्राधिकरण, 2021 बांध सुरक्षा अधिनियम, 2021 (2021 का 41) की धारा 54 की उप-धारा (2) के खंड (ज), (झ), (ञ), (ठ), (ड), (ढ), (त) और (द) के साथ पठित उप-धारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, राष्ट्रीय समिति की सिफारिशों के आधार पर राष्ट्रीय बांध सुरक्षा प्राधिकरण, एतद्वारा द्वारा निम्नलिखित विनियम बनाता है, अर्थात:-

1. **संक्षिप्त शीर्षक और शुरूआत**– (1) इन विनियमों को निरीक्षण, यांत्रिणीकरण, भूकंपीय आंकडों, जोखिम मूल्यांकन और निर्दिष्ट बांध विनियम, 2024 का मूल्यांकन कहा जाएगा।

   (2) ये विनियम सरकारी राजपत्र में प्रकाशन की तारीख से लागू होंगे।

2. **परिभाषाएं**– (1) इन विनियमों में, जब तक कि संदर्भ से अन्यथा अपेक्षित न हो,–

   (क) "अधिनियम" का अर्थ है बांध सुरक्षा अधिनियम, 2021 (2021 का 41);

   (ख) "प्राधिकरण" का अर्थ है अधिनियम की धारा 8 के तहत स्थापित राष्ट्रीय बांध सुरक्षा प्राधिकरण;

   (ग) "मालिक" का अर्थ है विनिर्दिष्ट बांध का मालिक;

   (घ) "अनुसूची" का अर्थ है इन विनियमों की कोई भी अनुसूची।

**4. Instrumentation.–** (1) Every owner shall, for the purposes of observing the health performance of the dam, have a minimum number of such instrumentation installed at each specified dam in the manner provided in this regulation.

(2) The locations at which the instruments shall be installed are indicated in black dots in the table below:

**TABLE**

Minimum number of set of instrumentation for monitoring the performance of specified dam:

| Type | Features of dams | Movements | Uplift and pore pressure | Water levels | Seepage/Leakage flows | Temperature | Crack and joint movement | Stress-strain |
|---|---|---|---|---|---|---|---|---|
| Embankment Dams | Upstream slope | – | – | • | – | – | – | – |
| | Downstream slope | • | • | – | • | • | • | – |
| | Abutments | • | • | – | • | • | – | – |
| | Crest | • | • | – | – | – | • | – |
| | Internal drainage system | – | • | – | • | • | – | – |
| | Relief Well | – | • | – | • | – | – | – |
| | Riprap and other slope protection | – | – | – | – | – | – | – |
| Concrete and Masonry Dams | Upstream slope | • | – | • | – | • | • | • |
| | Downstream slope | • | • | – | – | • | • | • |
| | Abutments | • | • | – | • | – | – | • |
| | Crest | • | • | – | – | • | • | • |
| | Internal drainage system | – | – | – | • | – | – | – |
| | Drainage Holes | – | • | – | • | – | – | – |

| Type | Features of dams | Movements | Uplift and pore pressure | Water levels | Seepage/Leakage flows | Temperature | Crack and joint movement | Stress-strain |
|---|---|---|---|---|---|---|---|---|
| | Intermediate Galleries | • | – | – | • | – | • | • |
| | Foundation Gallery | • | • | – | • | – | • | • |
| | Stilling basin | – | • | • | – | – | – | – |
| Barrages | Upstream of the barrage axis | – | – | • | – | – | – | – |
| | Downstream of the barrage axis | – | – | • | – | – | – | – |
| | Joints between the toe of abutments and the first and last barrage bay floor | • | – | – | – | – | – | – |

**Note 1:** The set of instruments specified in the table above shall be the minimum applicable and additional instruments if required, shall be installed considering site conditions and using engineering judgment.

**Note 2:** The re-instrumentation in the existing dams shall be done as may be required depending upon the site conditions and feasibility without causing damage to the structure.

**Note 3:** The instruments shall be installed in such a way that it does not become non-functional due to construction activity.

(3) The installation of instrumentation shall be done in consultation and coordination with the designers or engineering consultants, instrument manufacturers or suppliers who will provide assistance with instrument selection, installation, calibration, maintenance and future troubleshooting.

(4) For the purposes of ensuring that the instrumentation fulfill its mandated purpose, the owner shall provide necessary training or demonstration related to installation, operation and maintenance of the instruments to the persons responsible for data monitoring and its upkeep.

(5) The owner shall maintain technical documentation including technical requirements of the instruments, calibration requirements, installation report, servicing requirements and methods.

(6) The installation report shall contain the following basic information, namely:–

(i) details of location of instruments;

(ii) serial numbers or identification number of installed instruments;

(iii) initial calibration readings, initial field readings with associated data such as headwater and tail-water elevations, temperature, antecedent rainfall, weather conditions, etc.;

(iv) plans and sections sufficient to show instrument numbers and locations;

(v) appropriate surface and sub-surface strata graphic and geotechnical data;

(vi) descriptions of instruments and readout units including manufacturer's literature and performance specifications along with photographs or sketches wherever possible;

(vii) details of calibration procedures;

(viii) details of installation procedures along with photographs or sketches wherever possible, as well as the steps necessary for operation including troubleshooting concerns, connection to data loggers, etc;

(ix) initial readings of the installed instruments.

*(7)* **Every owner shall maintain a record of manual readings of the instrumentations in the following manner, namely:–**

(i) readings shall be recorded either in a field book or on specially prepared field data sheets;

(ii) project name, instrument type, date, time, observer name, readout unit number, instrument number, readings, remarks, weather, temperature, construction activity, and any other factors that

might possibly influence the readings may be clearly indicated in the format for collection of readings;

(iii) the latest readings shall be compared immediately with previous readings to verify as to whether the changes are real or caused by errors due to misreading or instrument malfunction;

(iv) registers of records for all instruments shall be properly indexed, indicating page numbers and maintained at safe location with responsible project personnel;

(v) all instrumentation data recorded manually shall be digitized for storage, analysis and retrieval;

(vi) the digitized raw data shall be maintained at multiple locations to guard against loss;

(vii) the raw data shall be analysed for any errors and necessary corrections shall be made and the processed data shall also be stored at multiple locations in digital format along with raw data.

(8) Every owner shall maintain a record of an automated data acquisition system in the following manner, namely:–

(i) the frequency of data acquisition shall be set as per requirement of each data set;

(ii) the frequency of data acquisition may be reviewed to incorporate any abnormal or abrupt changes in the concerned parameters;

(iii) the data shall also be stored at multiple locations to prevent data loss;

(iv) both manually and automatically collected data shall be suitably merged while storing in digital form, as may be required.

(9) The owner shall provide instrumentation data and analyses of such data to the State Dam Safety Organisation in the format specified by that Organisation.

(10) The analyses of instrumentation data shall be prepared by the dam safety unit containing the data plots for all the instrumentation of the dam indicating variations and possible causes thereof, on a half yearly basis, preferably along with the pre and post monsoon inspection and the owner shall forward the analysis of the instrumentation readings to the State Dam Safety Organisation:

Provided that in case of an emergent situation, where any abnormality is observed or otherwise necessitating immediate action or remedial measure, the same may be reported immediately to the State Dam Safety Organisation and on real time basis, thereafter.

(11) Every owner shall analyse the instrumentation readings in respect of under construction dams and forward the analysis report to the State Dam Safety Organisation at such intervals provided in the monitoring schedule, as per the design and construction requirement and stage of the project:

Provided that in case of sudden change where any abnormality is observed or otherwise necessitating an immediate attention, the frequency of observation shall be increased as per the field requirement, depending on the emergency condition.

(12) The automation of instrumentation shall be preferred wherever possible as per feasibility in the case of existing dams and all instrumentation shall be fully automated in the case of new dams.