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NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 10872-2021

Replacing DL/T 5395-2007

Code for design of roller-compacted embankment dams

碾压式土石坝设计规范

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Foreword

This document was issued on 22 December 2021 by the National Energy Administration of the PRC and takes effect on 22 June 2022.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 27.140, Chinese classification P 59.

It replaces DL/T 5395-2007, which is superseded.

This code has been revised in accordance with the requirements of the Notice of the National Energy Administration on Issuing the 2015 Plan for the Development and Revision of Sector Standards in the Field of Energy (Guo Neng Ke Ji [2015] No. 283). The drafting group carried out extensive investigation and research, summarized practical engineering

experience in earnest, and prepared the revision on the basis of a wide solicitation of comments.

The main technical contents of this code are: general provisions; terms and symbols; basic requirements; dam type selection and project layout; selection and design of embankment materials; dam structure; dam foundation treatment; connection between the dam and other structures; calculation and analysis of embankment dams; staged construction and dam heightening; instrumentation design; construction requirements; and initial impoundment, operation and maintenance.

The main technical changes introduced by this revision are the following.

The terms contact soil, special soil, soft clay and slightly cohesive soil have been added.

Requirements have been added for the provision of release facilities in structures used to draw down the reservoir water level.

Requirements have been added for the physical and mechanical indices of gravelly soil used as the impervious element.

Requirements have been added for the material properties and compaction of contact soil.

Requirements have been added for the zoning of extra-high dams of 200 m in height and above and for the filling and rolling indices of each material zone.

A requirement has been added for providing a transition zone at the junction between the dam shell material and rigid structures or the abutment slopes.

Provisions have been added for grouting galleries and for the concrete cover slab of the foundation.

Requirements have been added for consolidation grouting of sand and gravel foundations.

Criteria have been added for the safety factors against sliding of extra-high dams of 200 m in height and above.

Provisions have been added for the seismic design of embankment dams.

A chapter entitled Construction Requirements has been added, covering the use of construction information technology.

A chapter entitled Initial Impoundment, Operation and Maintenance has been added.

The scope of application and the classification of dams by height have been revised.

The scope of application of soft rock used as embankment material and the corresponding engineering measures have been revised.

The values of the partial coefficients used in the calculation of the sliding stability of the dam body have been revised.

The requirements and methods for the calculation of stress and deformation of the dam body and for three-dimensional seepage analysis have been improved.

The requirements for the flood-retaining standard during the construction period and for the filling elevations have been deleted.

The construction requirements for the closure section have been deleted.

This code is under the administration of the National Energy Administration. The China Renewable Energy Engineering Institute has proposed the code and is responsible for its routine administration. The Energy Sector Standardization Technical Committee for Hydropower Investigation and Design (NEA/TC15) is responsible for the interpretation of its specific technical contents. Comments and suggestions arising during implementation should be sent to the China Renewable Energy Engineering Institute (address: No. 2 Liupukang Beixiaojie, Xicheng District, Beijing; postcode 100120).

Chief development organizations: PowerChina Northwest Engineering Corporation Limited and the China Renewable Energy Engineering Institute.

Participating development organizations include PowerChina Chengdu, Kunming, Beijing, Guiyang, Zhongnan and Huadong Engineering Corporations Limited, the China Institute of Water Resources and Hydropower Research, the Nanjing Hydraulic Research Institute, Hohai University, Wuhan University and Guoneng Dadu River Basin Hydropower Development Co., Ltd.

Scope of the Code and Arrangement of Its Chapters

The English contents page printed in the standard shows how the design process is ordered. Chapter 3, Basic Requirements, begins on page 9 and sets out the general design requirements that apply throughout, including dam classification and the safety criteria referred to by the later chapters.

Chapter 4, Dam Type Selection and Project Layout, begins on page 11 and is divided into 4.1 Dam Type Selection, 4.2 Dam Axis, and 4.3 Layout of Water Release and Conveyance Structures.

Under 4.3 the foreword records a new requirement of this edition: release facilities are to be provided in the structures used to draw down the reservoir water level.

Chapter 5, Selection and Design of Embankment Materials, begins on page 14 and comprises 5.1 General Requirements, 5.2 Embankment Material Selection and Parameters, and 5.3 Filling and Compaction Requirements.

Two of the additions announced in the foreword belong to Chapter 5: the physical and mechanical indices required of gravelly soil used as an impervious element, and the material and compaction requirements for contact soil.