ICS 27.140
CCS P 59

NB

ENERGY INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

NB/T 10343-2019

Technical code for weak soil ground treatment of hydropower projects

水电工程软弱土地基处理技术规范

Issued on: December 30, 2019 **Implemented on: July 1, 2020**

Issued by: National Energy Administration of the PRC

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Foreword

This document was issued on 30 December 2019 by the National Energy Administration of the PRC and takes effect on 1 July 2020.

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.

This code was prepared in accordance with the requirements of the Notice of the National Energy Administration on Issuing the First Batch of Development and Revision Plans for Industry Standards in the Energy Field for 2014 (Guo Neng Ke Ji [2014] No. 298).

In drafting the document the working group carried out extensive investigation and

research, systematically summarised engineering practice, referred to the relevant domestic standards, and finalised the text on the basis of a broad consultation of opinions.

The main technical content of the code is: basic requirements; key points of engineering geological investigation; ground calculation; compacted ground; dynamically compacted ground; preloaded ground; composite ground formed with cement-fly ash-gravel piles; composite ground formed with soil compaction piles and lime-soil compaction piles; composite ground formed with sand-gravel compaction piles and sand-gravel replacement piles; composite ground formed with cement-soil mixing piles; composite ground formed with rigid piles; pile-net structure composite ground; high-pressure jet grouting reinforcement; grouting reinforcement; rock-fill displacement of silt; and blasting displacement of silt.

The National Energy Administration is responsible for the administration of the code. China Renewable Energy Engineering Institute, the General Institute of Hydropower and Water Resources Planning and Design, put the code forward and is responsible for its routine management.

The Standardization Technical Committee for Hydropower Survey and Design of the Energy Industry is responsible for the interpretation of the specific technical content.

Comments and suggestions arising during application are to be sent to China Renewable Energy Engineering Institute, No. 2 Liupukang Beixiaojie, Xicheng District, Beijing, postcode 100120.

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The foreword lists twenty-nine principal drafters and twenty principal reviewers of the code.

The code was approved by Announcement No. 8 of 2019 of the National Energy Administration, dated 30 December 2019, which released 152 energy industry standards together with the English versions of a further 39 standards.

The catalogue of industry standards attached to that announcement lists NB/T 10343-2019 as item 20, with an approval date of 30 December 2019 and an implementation date of 1 July 2020, and shows no superseded standard and no adopted international standard.

The date of entry into force stated on the title page is 1 July 2020. The code was published in Beijing in 2020 by China Water and Power Press, and is classified under ICS 27.140 and

Chinese standard classification code P 59.

1 Scope

NB/T 10343-2019 is the Chinese technical code for treating weak and soft soil foundations on hydropower works. It addresses the ground beneath dams, powerhouses, sluices, embankments, canals, spoil areas and construction platforms where the natural soil - soft clay, silt, loose sand, fill, organic or collapsible soil - cannot carry the structure or would settle too much. The code first sets out how the ground is investigated and how the treatment method is chosen against the settlement, bearing capacity, seepage and liquefaction requirements of the structure above. It then works through the methods one by one: replacement and cushion layers, preloading with and without vertical drains, dynamic compaction and dynamic replacement, vibro-compaction and vibro-replacement stone columns, sand and gravel piles, cement and lime soil-mixing columns, high-pressure jet grouting, rigid and semi-rigid composite foundation piles, geosynthetic reinforcement, grouting for consolidation, and rock-fill displacement of soft mud by dumping or blasting. Each method is given its design calculations, its material and equipment requirements, the construction sequence and the parameters to control during the works. The code closes with the field and laboratory testing used to verify that the treated ground actually performs as designed, and with the monitoring of settlement and pore pressure during and after construction. It applies to the design, construction and acceptance stages of hydropower projects of all grades in China.

Clause 1, General Provisions, opens the body of the code on page 1 and sets out the purpose, the field of application and the general principles governing the treatment of weak soil ground in hydropower projects.

Clause 2, Terms, begins on page 2 and defines the vocabulary used throughout the code for weak soil, ground treatment, composite ground and the individual treatment methods covered by the later clauses.

Together the two opening clauses occupy pages 1 to 3 of the printed text, before the general technical requirements start on page 4.

The terminology clause is the reference point for the pile and composite ground designations that recur in Clauses 9 to 14, where each treatment method has its own dedicated chapter.

3 Basic Requirements

Clause 3, Basic Requirements, runs from page 4 to page 6 and forms the general technical framework applied by all the method-specific clauses that follow.

It is the longest of the introductory clauses and precedes the investigation requirements of Clause 4.