



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 51033-2024

Standard for construction and acceptance of pumping station

水利泵站施工及验收标准

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Foreword

This document was issued on 12 March 2024 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 August 2024.

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

The document runs to 100 pages in translation. The identification, the dates, the table of contents and the clauses reproduced on this page are taken from the standard itself.

1 Scope

GB/T 51033-2024 is the Chinese national standard for the construction and acceptance of water conservancy pumping stations. A large irrigation or drainage pumping station is an unusual piece of civil engineering: a heavy concrete substructure built in water, carrying rotating machinery whose alignment tolerances are measured in fractions of a millimetre, and the standard exists because those two things are built by different trades to different habits and have to end up in the same place. It covers the construction layout, the foundation and excavation works, the concrete and the civil structures, the installation of the steel structures, gates and trash racks, the installation of the pump units and their drives and auxiliary systems, the electrical and control works, commissioning and trial operation, and the acceptance at each stage with the technical archive that has to accompany it. It applies to the construction, extension and renovation of large and medium-sized irrigation and drainage stations and to small stations housing medium-sized or larger units. It takes effect on 1 August 2024.

1.0.1 This standard is prepared with a view to standardize the construction and acceptance of water pumping stations, unify the technical requirements, and achieve the objectives of safety, economy and convenient management.

1.0.2 This standard is applicable to the construction, extension and renovation of large and medium-sized irrigation and drainage pumping stations, and civil structures, installation of steel structures and acceptance small pumping stations in which medium-sized and above pump units are installed.

1.0.3 Construction planning shall be prepared by constructor prior to the commencement of the construction of the pumping station.

1.0.4 Any new technology, material, equipment and process to be used in pumping station construction shall be tested or validated.

1.0.5 For a renovation project, a special scheme for structure removal and environmental restoration should be prepared and the proceeding construction and acceptance activities shall be performed according to the scheme.

1.0.6 Work safety, occupational health and environmental protection involved in the construction of pumping stations shall comply with current professional standard SL 721 Guidelines for Construction

Safety Management of Water and Hydropower Projects, and water and soil conservation involved shall be carried out in compliance with the provisions of current national standard GB 50433 Technical

Standard of Soil and Water Conservation for Production and Construction Projects.

1.0.7 A complete set of technical archives shall be established for the construction and acceptance of pumping station projects. The technical archive shall comply with the provisions of current national

standard GB/T 50328 Code for Putting Construction Project Documents into Records.

1.0.8 In addition to the requirements stipulated of this standard, the construction and acceptance of pumping stations shall also comply with requirements of the current relevant national standards.

2 Construction layout

2.1 General requirements

2.1.1 Construction layout shall be determined reasonably according to overall planning and local conditions based on the general layout of pumping station, structure type, construction conditions, and natural and social conditions of the project site.

2.1.2 For pumping station projects requiring river diversion during construction, the river diversion shall meet the requirements of current professional standard SL 303 Specifications for Construction Planning of Water Resources and Hydropower Projects.

2.1.3 The major construction plants and temporary facilities shall be located in such a way as to avoid or mitigate the impact of flood during the construction period, to meet the flood control requirements determined by the design, and to avoid area with adverse geologic conditions or area with potential hazards.

2.1.4 The construction layout shall meet the requirement of rational use of land, convenience of both production and living, minimizing soil erosion and least occupation of basic farmland and ecological red line controlled areas.

2.1.5 The temporary construction facilities should be arranged in combination with the permanent house buildings so as to minimize the removal and relocation of temporary facilities during construction and the construction site to be occupied. Permanent buildings and existing facilities may also be used as temporary facilities during construction.

2.1.6 If the site conditions allow construction layout alternatives differing greatly from each other, a careful comparison shall be made to select the optimum scheme. If necessary, special demonstration shall be carried out.

2.2 Methods and requirements of construction layout

2.2.1 Construction layout shall be formed in stages according to construction needs, and shall meet the construction requirements of each stage. The range of construction site to be leveled should be determined according to construction layout requirements.

2.2.2 In the construction layout design, the layout of construction diversion works and the construction zones of the main works should be first determined, and then the layout of temporary facilities, internal and external transportation. When arranging construction, factors such as the location and area of available site, the combination of temporary structures and permanent facilities and others shall be coordinated and considered. The boundary of production zone should be closed, and when the production zone is connected to the construction management zone and the living zone, measures such as fence or barricade shall be used to separate them.

2.2.3 The construction layout may be designed to include the following functional zones: 1 Main works construction area.

2 Construction plant areas.

3 Material processing area.

4 Warehouses and stockyards.

5 Assembly area for electromechanical equipment and steel structures.

6 Stockpiling or disposal area.

7 Construction management and living quarters.

2.2.4 The main construction zone should include the construction sites of main structures such as inlet structure, pump house and outlet structure. During the construction period, construction roads for earthwork excavation and backfilling, masonry works and concrete placing, as well as the assembly sites and transportation of steel structures, electromechanical equipment, shall be economically and reasonably considered.

2.2.5 The construction plant area should include working sites for aggregates production, steel bar fabrication, concrete production, water supply, power supply, wind supply, communications, mechanical repair and processing and others. The plants should be