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

NB/T 11551-2024

**Standard for construction and acceptance of TBM method in
coal mine roadway**

煤矿巷道TBM法施工及验收标准

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Foreword

This document was issued on 24 May 2024 by the National Energy Administration of the PRC and takes effect on 24 November 2024.

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 73.100.99, Chinese classification D 98.

This standard was prepared in accordance with the Notice of the General Department of the National Energy Administration on issuing the 2021 plan for the formulation and revision of industry standards in the energy field and the plan for the translation of foreign language versions, document Guo Neng Zong Tong Ke Ji [2021] No. 92, by China Coal Construction Group Co., Ltd., China Coal Tunnel Engineering Co., Ltd., China Coal No. 3 Construction (Group) Co., Ltd., Jincheng Hongsheng Construction Engineering Co., Ltd. and Jiangsu Shendun Engineering Machinery Co., Ltd. as chief drafting organizations, together with the participating drafting organizations concerned.

In the course of preparing this standard the drafting group carried out thorough investigation and research, carefully summarised the scientific and technological achievements and construction techniques that practice has proved mature and effective in recent years, sought the opinions of the organizations and experts concerned widely and in various forms, and after repeated discussion and study and several revisions finally settled the text.

This standard is divided into 13 chapters, comprising general provisions, terms, basic requirements, geological survey and prediction, parameter selection and system configuration of the TBM, construction preparation, assembly and demolition, driving construction, support, monitoring and information management, production auxiliary systems, safety, environmental protection and occupational health, and engineering quality acceptance.

This standard is administered by the National Energy Administration, and the China Coal Construction Association is responsible for its routine administration and for the adjustment and revision of parts of its content. The chief drafting organizations China Coal Construction Group Co., Ltd. and China Coal Tunnel Engineering Co., Ltd. are responsible for the interpretation of the specific provisions.

1 Scope

NB/T 11551-2024 is the Chinese standard for driving coal mine roadways with a tunnel boring machine, and for accepting the result. It exists because Chinese coal mining has moved to depths and to development lengths where the traditional method - drill, blast, muck out, support, repeat - has become the constraint on the whole mine. A drill and blast crew advances a few metres a day and every cycle stops production; an open type TBM breaks the full face, removes the muck on a belt and installs support continuously, and

advances an order of magnitude faster. The obstacle has never been the machine but the setting: a TBM in a coal mine works in an explosive atmosphere, in a roadway too small to turn around in, launched from and received into chambers that have themselves to be excavated conventionally, with no route out except the way it came. The document is built around that reality. It defines the twenty-one terms the method needs, from the open type TBM itself and its main machine, back-up system, connection bridge, gantry, cutter head and cutting tools, through the minimum horizontal turning radius and the breaking out torque that the drive must deliver when the cutter head jams, to the four chambers - installation, starting, receiving and demolition - and the launching, stepping and trial driving sequence. It then follows the job in order: geological survey and prediction ahead of the face, TBM parameter selection and applicability evaluation for the ground expected, construction and site preparation, transport, assembly, debugging, site acceptance, demolition and transition to the next drive, then the driving itself including construction in special sections, attitude control and construction survey. Support gets its own chapter with seven methods, from rock bolt and cable through steel mesh, reinforcement row, steel band and steel arch to shotcrete. Monitoring and information management, the production auxiliary systems - transport, ventilation and gas prevention, water supply, drainage, power and compressed air - and the safety, environmental protection and occupational health requirements follow, and the last chapter sets the quality acceptance criteria for the driving, the support and the floor and ditch work. It was issued on 24 May 2024 by the National Energy Administration and took effect on 24 November 2024.

1.0.1 This standard is formulated in order to standardise the construction and acceptance of coal mine roadway works by the TBM method, and to guarantee construction safety and engineering quality.

1.0.2 This standard applies to roadway works in coal mines constructed by open type TBM.

1.0.3 The engineering design, the construction management, the engineering quality acceptance and the management of the engineering records of coal mine roadway construction by the TBM method shall comply with the provisions of this standard.

1.0.4 The engineering design and the construction of coal mine roadways driven by the TBM method shall actively promote the application of advanced and mature new techniques, new technologies, new equipment and new materials.

1.0.5 In addition to complying with this standard, the construction and acceptance of coal mine roadway works by the TBM method shall also comply with the provisions of the relevant current national and industry standards.

2 Terms

2.0.1 coal mine roadway TBM method

The construction method in which a coal mine roadway is driven by a complete set of TBM