

TB

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

TB 10025-2019

**Code for design of retaining structures of railway earthworks
(English Translation)**

Issued on: June 25, 2015

Implemented on: June 25, 2006

Issued by: Ministry of Railways of the People's Republic of China

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1 General

1.0.1

This Code is formulated with a view to standardizing the technical requirements for the application of geosynthetics on subgrade of railway, improving the engineering quality of subgrade of railway, and meeting the requirements of railway engineering construction.

1.0.2

This Code is applicable to the design for the applications of geosynthetics on subgrade of railway.

1.0.3

The applications of geosynthetics on subgrade of railway shall be designed according to the railway grade, structural type of subgrade, as well as geological, hydrological and meteorological conditions. The design shall comply with the principles of adaptation to local conditions, safety and reliability, economy and rationality, and integrated application with other engineering materials and measures.

1.0.4

The applications of geosynthetics on subgrade of railway shall not only comply with this Code, but also meet those specified in the relevant current compulsory standards of the state.

2.1 Terms

2.1.1

geosynthetics

Generic term of the synthetic materials products applied in the geotechnical engineering

2.1.2

geotextile

Permeable cloth geosynthetics made of polymer fibers as the raw material

2.1.3

woven geotextile

Geotextile woven with fiber yarn or filament yarn along a certain direction

2.1.8

composite geodrain

Geodrain made of geotextile wrapping the core materials of different shapes and materials

2.1.9

strip geodrain

Vertical drain material made of plastic strip drain core materials in different shapes externally wrapped with nonwoven geotextile; strip geodrain is a kind of composite geodrain

2.1.10

special geosynthetic

Geosynthetic made by special processes and with special purposes

2.1.15

geocell

Three-dimensional geosynthetics products, with honeycomb structures, welded or assembled by the geosynthetics pieces

2.1.16

geomat

Three-dimensional net-shaped geosynthetics made of thread-line synthetic materials through a certain process treatment and by fusing on the nodes

2.1.17

three-dimensional vegetation grids

A kind of cell-shaped (similar to prismatic shape) vegetation geonet, made of plastic fiber through textile processing

2.1.18

expanded polystyrene

Light-duty geomaterials made of polystyrene by expanding after added with foaming agent and through moulding or extrusion process

2.1.31

creep

The phenomenon of material gradually increasing deformation with time under the action of constant force

2.2 Symbols

A - Dimensionless coefficient irrelevant to the filler property

Bs - Empirical coefficient relevant to the type and gradation of the protected

3 Basic requirements

3.0.1

The performance of geosynthetics shall meet the operating requirements and application conditions of railway subgrade engineering.

3.0.3

The allowable design tensile strength T of geosynthetics shall be calculated according to the following formula.

3.0.5

Geosynthetics shall be provided with the testing report of the testing organization authorized by the national competent department; they shall be provided with sign boards and marked with the trademark, product name, code, grade, specification, executive standard, manufacturer's name, production date, gross weight and net weight.

3.0.6

Attention shall be drawn to the frost protection, sun block, ventilation and drying during the transportation, storage and stacking of geosynthetics, which shall also be kept away from the high-temperature source.

3.0.7

State-of-the-art methods and processes shall be adopted during the construction of geosynthetics, which shall not be damaged.

4.1 General requirements

4.1.1

Geosynthetics may be adopted for the seepage prevention, filtration and drainage of constructed railway bed.

4.2.1 The laying positions of geosynthetics and cushion layer arrangement

shall meet the following requirements.

4.2.3 During the treatment for the existing railway subgrade bed problems, the geosynthetics shall be selected according to the following requirements.

4.2.4 The technical performance of geosynthetics shall meet the following requirements.

4.3 Key point of construction

4.3.1

Excavated section of bed must meet the design requirements. The subgrade surface under the sand cushion shall be made into the drainage slope not less than 4 % leaning to the outside of subgrade, and the subgrade surface and sand cushion shall not free from sharp sundries and crushed stone.

4.3.5 The problem treatment construction for the existing railway subgrade

bed must ensure the travel safety. Blockade line, by-pass or overhead track, speed-limiting traveling crane, and section construction methods may be adopted in the construction according to the construction conditions.

5.1.1 Integrated protection measures of geosynthetics and other

engineering materials and engineering measures shall be adopted for the subgrade side slope.

5.2.1 Cut slope with soil, weathered rock, soft rock easy of weathering and

underground water seepage on the slope surface as well as embankment slope with slope surface subject to the rainfall erosion should adopt three-dimensional vegetation grids, geomat and geonet in combination with green protective measures such as planting vegetations and vegetation zone.

5.3 Scour protection