JTJ

Professional Standard of the People's Republic of China

JTJ/T 019-1998

公路土工合成材料应用技术规范

Technical Specifications for Application of Geosynthetics in Highway

Issued on Dec 30, 1998 **Implemented on Feb 01, 1999**

Issued by the Ministry of Communications of the People's Republic of China

Notice on Issuing the *Technical Specifications for Application of Geosynthetics in Highway* and *Test Codes for Geosynthetics in Highway*

JGLF [1998] 829

Departments of Communications of all provinces and autonomous regions, Beijing Municipal Transportation Bureau, Shanghai Municipal Engineering Authority, Tianjin Municipal Engineering Bureau, Chongqing Municipal Transportation Bureau, subordinate highway design, construction, scientific research, monitoring and supervision units, highway institutions:

Hereby approve the *Technical Specifications for Application of Geosynthetics in Highway* (JTJ/T 019-98) and *Test Codes for Geosynthetics in Highway* (JTJ/T 060-98) to be implemented from February 1, 1999 as recommended professional standards.

Above standards were primarily edited by Chongqing Highway Research Institute of the Ministry of Communications and published by China Communications Press. Hope all organizations pay attention to accumulate materials and summarize experience in practice, and timely report discovered problems and modification comment letter to Chongqing Highway Research Institute of the Ministry of Communications for reference during revise.

Ministry of Communications of the People's Republic of China
December 30, 1998

Preface

Geosynthetics have been increasingly widely applied in highway engineering structure. To adapt to the development needs of highway construction in China and guide production practice better, former Highway Management Division of the Ministry of Communications gave out the task of drawing up the *Technical Specifications for Application of Geosynthetics in Highway* in 1994.

Based on the demand of Highway Management Division of the Ministry of Communications in JGLF [1994] 1265, an editorial group with Chongqing Highway Research Institute of the Ministry of Communications as chief editor, Henan Provincial Department of Communications, Changsha Communications University and Jiangsu Provincial Communications Research Institute as assistant editors was formed to jointly draw up the *Technical Specifications for Application of Geosynthetics in Highway*. In the process of formulation, the editorial group collected relevant standards and manuals and widely learned domestic and overseas advanced technology and experience, especially the scientific achievements and successful examples of highway departments in China of using geosynthetics to reinforce, discharge water and protect slope in highway subgrade, pavement, foundation treatment and other engineering since the beginning of 1980s, as well as relevant domestic industries' experience summary of similar engineering technology. Upon extensively seeking and hearing opinions and suggestions in various aspects, this Technical Specifications was formulated after revisions and supplements.

This Specification includes 8 chapters and 25 sections in all with the focus on major application projects in current highway engineering, including embankment reinforcement, filtration and drainage, back embankment filling and reinforcement, embankment protection, pavement crack prevention, construction quality control, check and acceptance etc. Specific provisions on the application of geosynthetics in the design, construction, quality control and check of highway engineering are made in this Specification.

Since provisions on "reinforced soil wall", "plastic drain board soft treatment foundation" and "drainage flow" have been made in current relevant "specifications", to avoid repetition, this Specification does not further involve them. Relevant specifications can be referred to in application.

To make this Specification better adapt to the development needs of geosynthetics application technology and accord with the practice of highway construction in China, practical situation of various places need be combined to constantly accumulate materials and summarize experience to make it better and complete. Each organization shall timely inform Chongqing Highway Research Institute of the Ministry of Communications (Address: 5km from Nan'an District, Chongqing, Zip code: 400067) of discovered problems and suggestions for reference during revise.

Chief Editor: Chongqing Highway Research Institute of the Ministry of Communications

Assistant Editors: Henan Provincial Department of Communications
Changsha Communications University
Jiangsu Provincial Communications Research Institute

Principal Drafters: Deng Weidong Huang Xiaoming Zheng Jianlong Chen Qianying
Jiang Zhenxiong Zheng Zhi
Tang Xiuying Zhang Xiaobing Li Guoxi
Chen Yongfu

Contents

1 General 1
2 Terms and Symbols 1
2.1 Terms 6
2.2 Main symbols 7
3 Embankment Reinforcement 8
3.1 General Provisions 8
3.2 Material Selection and Design Parameters 8
3.3 Structural Form 10
3.4 Design Calculation 11
3.5 Construction Focus 15
4 Filling and Reinforcement of Back Embankment 17
4.1 General Provisions 17
4.2 Laying of Geosynthetics 17
4.3 Construction Focus 19
5 Filtering and Drainage 21
5.1 General Provisions 21
5.2 Filter Design 22
5.3 Drainage Design 23
5.4 Construction Focus 25
6 Subgrade Protection 26
6.1 General Provisions 26
6.2 Slope Protection 26
6.3 Scour Protection 29
7 Pavement Crack Prevention 35
7.1 General Provisions 35
7.2 Material Requirements 35
7.3 Design and Construction Focus 36
8 Control, Check and Acceptance of Construction Quality 38
8.1 General Provisions 38
8.2 Acceptance of Materials 38
8.3 Construction of Test Section 40
8.4 Check and Acceptance 40
8.5 Quality Control 41
Explanation of Wording in this code 44

1 General

1.0.1 To promote the spread and application of geosynthetics in highway engineering (Implement national technological economic policy in application) and guarantee safe and reliable engineering, hereby draw up this Specification.

1.0.2 This Specification applies to highway engineering at all levels that use geosynthetics.

1.0.3 Materials should be selected based on application purpose and specific engineering structure while using geosynthetics. Rock, pavement material or other materials that directly contact geosynthetics shouldn't include chemical substances that may severely damage the physico-mechanical properties of geosynthetics.

1.0.4 Highway engineering that use geosynthetics should be designed based on the principle of safe, applicable and economical according to the grade, geological, hydrologic, meteorological conditions and structure program of subgrade and pavement of corresponding highway. The design should comply with the principle of suitable measures, reasonable materials, convenient construction and maintenance. Program comparison should be made if necessary.

1.0.5 Earthwork and stonework construction of engineering that use geosynthetics should be different from traditional earthwork and stonework, which must be carefully constructed based on design requirement.

1.0.6 With reinforcement, protection, filtration, drainage, isolation and other functions, geosynthetics should be selected and designed according to their main functions in structure while being used. If geosynthetics also have other functions whose effect need be considered except their main functions in structure, the verification and design of corresponding engineering should also be made.

1.0.7 Various parameters of geosynthetics specified and adopted in this Specification should be determined in line with the method stated in the *Test Codes for Geosynthetics in Highway* (JTJ/T 060).

1.0.8 The design, construction and relevant test method of engineering that use geosynthetics should comply with current national and ministerial specifications except in line with this Specification.

2 Terms and Symbols

2.1 Terms

2.1.1 Geosynthetics

Various products made of synthetic polymer are the generic term of synthetic materials used in rock engineering. They can be placed inside and on the surface of rock or other engineering structures, or among structural layers, a new engineering material with rock reinforcement and protection or other structural functions.

2.1.2 Geonet

Mesh geosynthetics pressed with synthetic stripe or synthetic resin with planer structure.

2.1.3 Geogrid

Planar mesh material made of polymeric material after orientation stretching with open grid and high strength.

2.1.4 Fabriform

Continuous (or separate) baggy material made of double-layer polymeric chemical blended fabric. Concrete or mortar can be poured into fabriform with high-pressure pump instead of formwork and form platy structure or those with other shapes at last.

2.1.5 Geotextile

Planar geosynthetic with water permeability which can be divided into non-woven geotextile and woven geotextile according to manufacturing method. Non-woven geotextile is a textile combined with filament or fiber through directed or nondirective arrangement; woven geotextile is a textile interlaced with two groups of parallel filament or gauze in a certain way.

2.1.6 Geocomposite Drain

Geocomposite drain composited of non-woven geotextile, geonet, geomembrane or synthetic core materials with different shapes.

2.1.7 Glass Geogrid

Planar gridding material made of glass fiber.

2.1.8 Geomat

Intertwined three-dimensional mat made of thermoplastic resin after extrusion, stretch and other working procedures, which are interfused on junctions and whose bottom is high modulus base layer.

2.1.9 Equivalent Opening Size

An index to show the pore size of textile geosynthetics. Different equivalent opening sizes can be got according to distinct screen residue standards.

2.1.10 Equipment Opening Size

An index to show the pore size of gridding (e.g. geonet, geogrid) geosynthetics. It is the diameter of homalographic circle which is converted from the mesh with certain shape.

2.1.11 Indicative Grain Size

Soil grain size corresponding to a certain screen residue, an index to show the size of soil grain.

2.1.12 Reinforcement

It refers to mix or pave appropriate reinforced material in soil or other materials, or on the interface, an action to improve the strength of soil mass or structure and non-deformability.

2.1.13 Filtration

完整版本请在线下单

或咨询：

TEL: 400-678-1309

QQ: 19315219

Email：info@lancarver.com

http://www.lancarver.com

线下付款方式：

1. 对公账户：

单位名称：北京文心雕语翻译有限公司

开 户 行：中国工商银行北京清河镇支行

账　　号：0200 1486 0900 0006 131

2. 支付宝账户：info@lancarver.com

注: 付款成功后，请预留电邮，完整版本将在一个工作日内通过电子 PDF 或 Word 形式发送至您的预留邮箱，如需索取发票，下单成功后的三个工作日内安排开具并寄出，预祝合作愉快！