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公路沥青路面施工技术规范

Technical Specifications for Construction of Highway Asphalt

Pavements

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Technical Specifications for Construction of Highway Asphalt Pavements
公路沥青路面施工技术规范
JTG F40-2004

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NOTICE

This code is written in Chinese and English .The Chinese text shall be taken as the ruling one in the event of any inconsistency between the Chinese text and the English text.

**Notice on Promulgation of “Technical Specifications for Construction of Highway
Asphalt Pavements” (JTG D40-2004)**

No.24

Hence “Technical Specifications for Construction of Highway Asphalt Pavements” has been approved as the national standard with a serial number of JTG F40-2004, which shall come into force upon January 1st, 2005. At the same time, the former “Technical Specifications for Construction of Highway Modified Asphalt Pavements” JTG 032-94 and “Technical Specifications for Construction of Highway Modified Asphalt Pavements” JTG 036-98 is superseded.

“Technical Specifications for Construction of Highway Asphalt Pavements” JTG F40-2004 is prepared by Research Institute of Highway, Ministry of Communication of PRC as the chief editorial units. Ministry of Communication will be responsible for the management and explanation on this standard. Research Institute of Highway, Ministry of Communication will be responsible for the explanation on the detailed technical contents.

The users of this Specification are kindly required to summarize experience and collect materials, and send any suggestion or comment in this regard to Research Institute of Highway, Ministry of Communication of PRC (No.8 Xitucheng Road, Haidian District, Beijing. Post Code: 100088) at any time for reference in future revision.

It is hereby for notice.

Ministry of Communications of the People's Republic of China

September 4th, 2004

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Preface

The former Industry Standards of China “Technical Specifications for Construction of Highway Asphalt Pavement” JTG 032-94(hereafter referred to as “the former Specification”) was issued on June 7,1994 and came into force upon December 1,1994 having great effect on the aspect of ensuring the construction quality of asphalt pavements. However, construction in 1994, construction of highway in our country was at the very beginning of the start. Highway mileage opened to traffic was just 1130km in 1993. But by the end of 2003, it reached nearly 30000km, most of which was asphalt pavement. Under the new trend of rapid traffic development, it brings many new changes to construction of highway at home and abroad: Internationally with the research achievement release of Superpave TM from SHRP of USA and CEA Asphalt & Asphalt Mixture of Europe, countries all over the world have made more in-depth research in asphalt pavement, getting many important new achievements. Thus many countries have modified the relevant specifications appropriately, and new road construction machinery as all well as new construction process have made impact on that of our country in varying degrees; interiorly according to a series of scientific research such as national science& technology promotion and long-term construction practice, which can not keep pace with the needs of highway construction, is revised for the purpose of meeting the new requirements, and superseded by “Technical Specifications for Construction of Highway Asphalt Pavements” JTG F40-2004(hereafter referred to as “this Specification”).

In order to have research on the main technical problems related to the specifications, Ministry of Communication has successively organized and offered a series of research subjects, including “Revision on Design Methods of Gradation and Mix Ratio of Asphalt Mixture and Mineral Aggregate” , “Measuring Methods and Index Requirements under Heavy Traffic Load(compared with GTM)” , “Standards for Anti-slide Technology of Highway Asphalt pavements” , “Emulsified Asphalt for Pavement” ,etc. Many provinces, cities and autonomous regions have offered relevant research subjects and obtained lots of achievements with great value, which accordingly provide technical evidence for revising the specification. Meanwhile, revision for this “Specification” and relevant specifications has been thoroughly corresponded.

Therefore, this “Specification” is prepared on the basis of the former “Specification” by integrating relevant contents of “Technical Specifications for Construction of Highway Modified Asphalt Pavements” with “Technical Guide for Highway Stone Matrix Asphalt Pavement”, extending scientific research and experiment verification for the main technical problems and thoroughly absorbing research achievements form each subject, finally according to widely suggestions and comments holding.

The main contents of this revision include:

Putting forward new standards for highway asphalt and climate zone of asphalt pavement on the basis of the eighth Five-year National Award for the Promotion of Science and Technology; as well as the methods to choose grade of asphalt according to local climate condition and traffic condition (class of highway).

Emphasizing several measures about early-age distress in the General. Such as preventing pollution between layers, ensuring proper construction period, etc.

Entirely revising technical requirements for highway petroleum asphalt and emulsified asphalt and partly revising technical requirements for aggregates in the parts of material.

Supplementing and perfecting some special requirements for modified asphalt and the aspects of SMA.

Confirming the meaning of gradation range of three layers mineral aggregate and putting forward the principles of standardizing and regulating gradation range of mineral aggregate.

Perfecting design methods for mix ratio of asphalt mixture, regulating design methods, indexes and standards of unifying calculating methods of volume index such as void ratio.

Revising and supplementing examination methods and technical requirements for mix ratio design of asphalt mixture, adding examination index of water permeability.

Adjusting applicable pressing layer thickness of different grain sizes of mixtures, categories and specifications of asphalt mixtures with different layers; confirming that the design structure and material used are required to be examined, supervised and affirmed during the construction period.

In the parts of construction process, mainly revising the requirements for mixing plant, putting forward the methods of process control and total volume examination, adding the measures to improve smoothness of asphalt pavement, emphasizing not only the contents such as limit to laying width and intensifying pressing of tyre-type road roller, etc. But also the notice in winter construction and raining season construction.

Modifying the contents of prime coat, tack coat and sealcoat, moving seal coat part to the chapter of Surface Treatment as well as supplementing the contents about new structures, such as slurry seal and micro-surfacing, etc.

Putting forward the basic requirements of Steel Bridges Deck Surfacing.

Revising index, frequency and method of construction quality examination, supplementing the requirements of water tightness (water permeability coefficient) and emphasizing that examination of compression degree mainly relies on process control.

This revision has made and stressed higher requirements for pavement of highway and arterial highway. Many items have made different requirements for pavement classes of highway.

Units and individuals are kindly required to send any suggestion or comment in this regard to editorial units of the specifications for reference in future revision.

Chief editorial units: Research Institute of Highway, Ministry of Communication Major drafter: Shen Jin'an, Li Fupu, Chen Jing

1 General

1.0.1 This Specification has been worked out for the purpose of implementing guidelines of “aborative construction and quality upfront”, ensuring construction quality of asphalt pavement.

1.0.2 This code applies to the construction for all class of highway asphalt pavement of newly-built and modified.

1.0.3 The construction for asphalt pavement shall comply with national specifications for environmental and eco-system protection.

1.0.4 The construction for asphalt pavement shall require construction organization plan and ensure proper construction period. Asphalt pavement shall not be under construction when the air temperature is lower than 10°C (highway and arterial highway) or 5°C (highway of other classes) and in the condition of raining days and wet pavement.

1.0.5 Asphalt top coat shall be continuously constructed in order to avoid across interference of other procedures that may pollute asphalt layers as prevent pollution of construction and transportation.

1.0.6 The construction for asphalt pavement shall meet the needs of highway communication condition and climate condition in the constructing location. Climate zone shall be implemented in accordance with the zones in Appendix A.

1.0.7 The construction for asphalt pavement shall carry out good labour protection to ensure safety. Asphalt mixing plant shall provide fire-fighting equipments, so fire and smoke must be strictly forbidden during the whole process of mixing and using liquid petroleum asphalt. In the process of using coal tar pitch or avoid the skin from directly touching coal tar pitch that is harmful to health.

1.0.8 The laboratory for testing and examining asphalt pavement shall obtain relevant qualification by authentication. The experiment staff shall be certificate of operation, and apparatus or equipment shall be qualified according to certification.

1.0.9 The construction for asphalt pavement should positively adopt new technology, material and arts which have been testified by experiment and practice.

1.0.10 Besides complying with this Specification, the construction for asphalt pavement shall also comply with other relevant national condition and area can work out supplementary rules according to the fact. Provinces, cities, autonomous regions or engineering construction units can work out relevant technical guide according guide according to the fact, whose technical requirements should not be lower than the rules in this Specification.

2 Terms, Symbols and Codes

2.1 Terms

2.1.1 Asphalt binder. Asphalt cement

Asphalt binder is the generic name of asphalt material (including additive, modifier, etc.) used for cementation in asphalt mixture.

2.1.2 Emulsified bitumen (British), Asphalt emulsion, Emulsified asphalt (American)

Emulsified asphalt, also called asphalt emulsion, is a uniform asphalt product made from petroleum asphalt and water effected by emulsion of emulsifier and stabilizer.

2.1.3 Liquid bitumen (British), Cutback asphalt or fluxed asphalt, is an asphalt product made from petroleum asphalt diluted by solvent such as gasoline, petroleum oil and diesel oil, etc.

2.1.4 Modified bitumen (British), Modified asphalt cement (American)

Modified asphalt cement is an asphalt binder made by adding additive (modifier), such as rubber, resin, high molecular polymer, natural asphalt and grinded rubber powder, or other materials, for the purpose of improving the performance of asphalt or asphalt binder.

2.1.5 Modified emulsified bitumen (British), Modified asphalt emulsion (American)

Modified asphalt emulsion is an emulsion asphalt product made by adding polymer latex in the process of asphalt emulsion, or mixing polymer later with finished product of asphalt emulsion, or emulsifying polymer modified asphalt.

2.1.6 Natural bitumen (British), Natural asphalt (American)

Natural asphalt is petroleum asphalt, which exists in natural state, is formed by petroleum that is continuously squeezed by earth crust and changes gradually with contacting air and water in the nature. Mineral substances are often mixed in natural asphalt in certain proportion, which can be categorized into lake asphalt, rock asphalt, undersea asphalt, oil shale, etc.

2.1.7 Prime coat

Prime coat, a layer that permeating the surface of black base in certain depth, is made by spraying cutback petroleum asphalt, emulsified asphalt and coal tar pitch on the black base, for the purpose of well combining of asphalt coat and non-asphalt material black base.

2.1.8 Tack coat

Tack coat is the layer of asphalt material sprayed for the purpose of strengthening sticking between two asphalt coats of pavement, asphalt coat and concrete pavement.

2.1.9 Seal coat

Seal coat is an asphalt binder layer with certain thickness laid on the asphalt covering or black base for the purpose of sealing void of surface and preventing moisture invading. The coat laid on the surface of asphalt covering is called upper seal coat, while the coat laid under asphalt covering and on the surface of black base is called lower seal coat.

2.1.10 Slurry seal

Slurry seal is a wearing surfacing of an asphalt mixture laid uniformly on the pavement. Asphalt mixture in the floating state is made up of mixed stone fragments or sand in proper gradation, fillings (cement, lime fly ash, stone power, etc.) as well as emulsified asphalt, additive and water to scale.

2.1.11 Micro-surfacing

Micro-surfacing is a wearing surfacing of an asphalt mixture laid uniformly on the pavement. Asphalt mixture in the floating state is made up of mixed stone fragments or sand in proper gradation, fillings (cement, lime, fly ash, stone powder, etc.) as well as polymer modified asphalt emulsion, additive and

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