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INDUSTRY STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

JTG D60-2015

Replacing JTG D60-2004

General Specifications for Design of Highway Bridges and Culverts

公路桥涵设计通用规范

(English Translation)

Issued on: September 9, 2015 **Implemented on: December 1, 2015**

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

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Foreword

In accordance with the requirements of the "Notice on Issuing the 2009 Plan of Highway Engineering Standard Formulation and Revision Projects" (Ting Gonglu Zi [2009] No. 190) of the Ministry of Transport, CCCC Highway Consultants Co., Ltd., as the chief development organization, undertook the revision of the "General Specifications for Design of Highway

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Bridges and Culverts" (JTG D60-2004).

This specification is a comprehensive revision of the former "General Specifications for Design of Highway Bridges and Culverts" (JTG D60-2004). After approval it is issued and implemented as the "General Specifications for Design of Highway Bridges and Culverts" (JTG D60-2015).

During the revision, the revision group carried out a large amount of scientific research work, absorbed the research results and practical engineering design experience of other domestic organizations, referred to and drew on advanced international standards and specifications, and compared and coordinated this specification with related domestic specifications. After the initial draft of the provisions was completed, the opinions of relevant organizations and individuals engaged in design, construction, project development and administration were widely solicited in various ways, and the text was finalized after repeated discussion and modification.

This specification consists of 4 chapters and 1 appendix. The main chapters are: 1 General provisions; 2 Terms and symbols; 3 Design requirements; 4 Actions.

The main contents of this revision include: requirements on the overall design of bridges and culverts have been supplemented; provisions on the design working life of bridges and culverts, traffic safety, environmental protection, durability, structural monitoring of bridges and risk assessment have been added; design requirements for maintenance facilities of bridges and culverts have been added; the provisions on the classification and calculation methods of combinations of actions and on vehicle load standards have been adjusted; provisions on characteristic values of vehicle fatigue loads, etc. have been added; provisions on the seismic design situation have been supplemented.

All relevant organizations are requested to send any problems and comments found during implementation to the routine management group of this specification (address: CCCC Highway Consultants Co., Ltd., Room 407, Block B, Desheng International Center, No. 83 Deshengmenwai Street, Beijing; postcode: 100088; fax: 010-82017041) for reference in future revision.

Chief development organization: CCCC Highway Consultants Co., Ltd.

Participating development organizations: Tongji University; Chongqing Jiaotong University

1 General provisions

1.0.1

This specification is formulated to standardize the design of highway bridges and culverts in accordance with the principles of safety, durability, applicability, environmental protection, economy and aesthetics.

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1.0.2
This specification is applicable to the design of newly built and reconstructed highway bridges and culverts of all grades.

1.0.3
The design reference period of highway bridge and culvert structures is 100 years.

1.0.4
The design working life of the main structures and replaceable components of highway bridges and culverts shall not be less than that specified in Table 1.0.4.

Table 1.0.4 Design working life of bridges and culverts (years)

Columns: highway grade | main structure: super-large bridges and large bridges | main structure: medium bridges | main structure: small bridges and culverts | replaceable components: stay cables, suspenders, tie rods, etc. | replaceable components: railings, expansion devices, bearings, etc.

Expressway, Class I highway | 100 | 100 | 50 | 20 | 15

Class II highway, Class III highway | 100 | 50 | 30 | 20 | 15

Class IV highway | 100 | 50 | 30 | 20 | 15

1.0.5
The classification of super-large, large, medium and small bridges and culverts by single-span length or total multi-span length is given in Table 1.0.5.

Table 1.0.5 Classification of bridges and culverts

Columns: classification | total multi-span length L (m) | single-span length LK (m)

Super-large bridge | L > 1 000 | LK > 150

Large bridge | 100 <= L <= 1 000 | 40 <= LK <= 150

Medium bridge | 30 < L < 100 | 20 <= LK < 40

Small bridge | 8 <= L <= 30 | 5 <= LK < 20

Culvert | - | LK < 5

Note 1: The single-span length refers to the standard span.

Note 2: The total multi-span length of girder bridges and slab bridges is the sum of the standard spans of the multiple spans; for arch bridges it is the distance between the springing lines inside the abutments at both ends; for bridges of other types it is the length of the carriageway of the deck system.

Note 3: Pipe culverts and box culverts are all called culverts, regardless of the pipe diameter or

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span and the number of spans.

Note 4: Standard span: for girder bridges and slab bridges, the distance between the centre lines of two piers or between the centre line of a pier and the front edge of the abutment back wall; for arch bridges and culverts, the clear span.

1.0.6
Highway bridges and culverts shall be designed for disaster mitigation and prevention, such as resistance to wind, earthquake and collision.

1.0.7
The design of highway bridges and culverts shall meet the relevant requirements of environmental protection and resource conservation.

1.0.8
The design of highway bridges and culverts shall comply not only with this specification but also with the current relevant national and industry standards.

2.1.1 design reference period

Time parameter selected for determining the values of variable actions, etc.

2.1.2 design working/service life

Period during which, under the conditions of normal design, normal construction, normal use and normal maintenance, a bridge or culvert structure or structural member can be used for its intended purpose without major repair or replacement.

2.1.3 limit states

When the whole structure or a part of the structure exceeds a certain specified state, it can no longer satisfy a certain functional requirement specified in the design; this specified state is the limit state for that function.

2.1.4 ultimate limit states

States corresponding to the structure or structural member reaching its maximum load-bearing capacity or a deformation unsuitable for continued load-bearing.

2.1.5 serviceability limit states

States corresponding to the structure or structural member reaching a specified limit value for normal use or durability.

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