

ICS 17.160
CCS J 04



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

GB/T 29715-2013

**Mechanical vibration and shock -- Guidelines for dynamic tests
and investigations on bridges and viaducts**

机械振动与冲击 桥和高架桥动态试验和检测指南

(English Translation)

Issued on: September 18, 2013

Implemented on: June 1, 2014

Issued by: Standardization Administration of China

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Foreword

This standard was drafted in accordance with the rules of GB/T 1.1-2009 and GB/T 20000.2-2009 given.

This standard uses redrafted Law Amendment uses ISO 14963:2003 "Mechanical vibration and shock bridges and viaducts dynamic testing and detection guide".

This standard and ISO 14963:2003 compared to an increase in the structure 2 (4.5 and 4.6) and an appendix (Appendix C).

This standard makes the following editorial changes. because ISO 14963:2003 Original presence of structural defects in the reg edit, and this standard ISO 14963:2003 compared to Chapter 4, in the structure of some adjustment, are listed in Appendix C of this standard and ISO 14963:2003 Chapter Article no control list.

This standard by the national mechanical vibration, shock and condition monitoring Standardization Technical Committee (SAC/TC53) and focal points.

This standard was drafted. Traffic Highway Research Institute of the Ministry of Transport,

Donghua Testing Technology Development Co., Ltd., Shanghai Jiaotong University, Tsinghua University, China Academy of Railway Sciences, Zhengzhou Machinery Research Institute.

Introduction

By measuring, interpretation and reporting structure response, dynamic testing dynamic excitation helps control structures. Experimental design should be consistent with study and specific target structure type. Measure commonly available full-bridge (including foundation or partial elements) and frequency domain (or) the dynamic characteristics of the time domain.

This standard applies to the design of permanent and temporary bridges, viaducts engineering construction and maintenance. Dynamic tests can be implemented as follows purpose.

- Assess the safety of the construction of the bridge structure;
- Verify the design after completion;
- Assess wind and seismic analysis of the dynamic characteristics and the live load;
- Active monitoring of bridge damage and exploration;
- Confirm the effect of reinforcing the bridge;
- Bridge diagnosis during emergency;
- As a condition monitoring based diagnostic tests.

Motion detection can be used as part of the new management or conservation and restoration design process (experimental design).

Mechanical vibration and shock Bridge and viaduct dynamic testing and testing guidelines

1 Scope

This standard provides guidance for the dynamic test and inspection of bridges and viaducts.

- Press construction and use of the test classification;
- Provide guidance for control and detection of components and full-bridge type structure;
- Listed excitation and measuring equipment needed;
- The detection method according to the corresponding signal processing, data classification and reporting is described.

This standard provides general guidelines for dynamic tests. Dynamic Characteristics of the

test resulting information can be used as condition monitoring or system identification basis. Dynamic tests described in this standard can not replace a static test.

The test shall be described in detail all of the dynamic characteristic test of each mode of vibration (ie frequency, stiffness, vibration modes and damping) and web movement as much as possible Non-linear change in value.

This standard applies to roads and bridges, railway bridges, pedestrian bridges and viaducts (including the construction and operation phases) and other works (or other Project type), provide assurance in their application specific structure.

This standard applies to the special structure (cable-stayed bridge or suspension), the need to carry out specific tests according to their engineering characteristics.

Note: The below this standard, the term "bridge" refers to the "bridge and viaduct."

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 2298 Mechanical vibration, shock and condition monitoring of vocabulary (ISO 2041, IDT)

3 Terms and Definitions

Terms and definitions GB/T 2298, as defined in applicable to this document.

Category 4

4.1 Overview

Subject to the dynamic behavior of the bridge superstructure type, static design and construction methods, the section type, support conditions, the type of foundation and the lower junction Large structures (piers and abutments) impact. In the dynamic test these features need to be considered, given the classification of bridges in the 4.2 to 4.4. This Species classification norms will help prepare a measurement report.

4.2.1 Superstructure material

According to the superstructure material, it can be divided into.