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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33521.32-2021

Mechanical vibration - Ground-borne noise and vibration arising from rail systems - Part 32: Measurement of dynamic properties of the ground

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Foreword

GB/T 33521 "Ground-induced structural noise and ground-borne vibration generated by mechanical vibration track systems" has been or planned to publish the following

part.

---Part 1.General Provisions;

---Part 31.On-site measurement guidelines for human exposure evaluation in buildings;

---Part 32.Dynamic performance measurement of the earth.

This part is part 32 of GB/T 33521.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this part is equivalent to ISO /T S14837-32.2015 "Ground-induced structural noise generated by mechanical vibration track system"

Sound and ground-borne vibration. Part 32.Measurement of the dynamic properties of the earth."

Introduction

In order to solve the problem of noise and vibration generated by the track system and propagated through the transmission path between the vibration source and the receiving position of the building, it is necessary to obtain

Take the noise and vibration transfer function of the earth. To this end, it is necessary to understand the geological characteristics and bedding structure that affect the transfer. Generally speaking, in order to estimate

These parameter characteristics require testing or other methods. For this purpose, this section specifies the measurement of relevant geodetic parameters.

Try and estimate methods.

Chapter 4 of this part provides an overview of ground-induced structural noise and ground-borne vibration. After this is the main content of this part, it is divided into two parts

point. Chapter 5 defines the relevant dynamic parameters of the earth, describes the correlation between these parameters and the basic physics relationship with wave propagation.

Chapter 6 gives the methods for determining these parameters. 6.3 gives a simple empirical correction based on traditional geotechnical engineering and engineering geological index parameters

Estimation method; 6.4 gives the method of indirect measurement from the field penetration test data of rock and soil; 6.5 and 6.6 give more accurate direct on-site original

Bit and laboratory methods to test these parameters.

Produced by mechanical vibrating track system

Ground-induced structural noise and ground-borne vibration

Part 32.Dynamic performance measurement of the earth

1 Scope

This part of GB/T 33521 provides the ground between the track system and the foundation of adjacent buildings (i.e. ground-induced structural noise and ground

Guidelines and methods for the dynamic performance measurement of the propagation medium that transmits vibration. The purpose is to determine the parameters of the earth system in order to reliably predict the noise

And vibration propagation, designing track systems and foundations that meet the requirements of noise and vibration, planning countermeasures, and verifying design methods.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 33521.1-2017 Ground-induced structure noise and ground-transmitted vibration produced by mechanical vibrating track system Part 1.General

(ISO 14837-1.2005, IDT)

3 symbols

The following symbols apply to this part of GB/T 33521.

Note. See Appendix A for abbreviations summary.

B. The dimensionless constant in the formula of shear modulus (Gmax)

D and loss-related distance attenuation factor

d wave propagation distance

Emax Young's modulus, low strain dynamic value

e void ratio, e=phi/(1-phi)

f frequency

G* complex shear modulus

Gmax shear modulus, low strain dynamic value

Gsec secant shear modulus, dynamic value

Ip Plasticity Index

Kmax bulk modulus, low strain dynamic value

k* complex wave number

M * complex confinement modulus

Mmax confinement modulus, low strain dynamic value

Corrected number of hammer strokes in N60 standard penetration test (SPT)

n The stress index in the shear modulus (Gmax) formula

P vibration power flux