ABSTRACT

An unconditionally stable explicit method for nonlinear structural dynamcis in time history analysis

Prof. Dr. SHUENN-YIH CHANG, MEng. TRAN NGOC CUONG

Although some family methods with unconditional stability and numerical dissipation have been developed for structural dynamics, they are all implicit methods and thus an iterative procedure is generally involved for each time step. In this paper, a new family method is proposed. It involves no nonlinear iterations in addition to unconditional stability and favorable numerical dissipation, which can be continuously controlled. In particular, it can have a zero damping ratio. The most important improvement of this family method is that it involves no nonlinear iterations for each time step, it can save many computationally efforts when compared to the currently available dissipative implicit integration methods.

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Application Open-source software OpenSees in programming and simulation of bridge structures under the seismic excitations

Eng. TRAN TIEN DAT, Eng. NGUYEN DUC PHUC, Dr. TRAN ANH BINH

OpenSees (Open System of Earthquake Engineering Simulation) is an open source software with code libraries is primarily written in C++, an object-oriented programming language. It allows users to create finite element applications for simulating the response of structural and geotechnical systems subjected to earthquakes. This paper introduces OpenSees and from which proposes to build algorithms for applications in simulation an example of bridge structure under the seismic excitations.

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Analysis of some factors affecting efficiency to strengthen reinforced concrete beams by using fibers reinforced plymer

MEng. NGUYEN HUU TUAN, MEng. DOAN NHU HOAT, MEng. TRAN DINH HOANG

This paper presents the results of research on factors affecting the efficient reinforcement of beam's bending resistance by fiber reinforced polymer (FRP). Recently some bridges applied this method to strengthen bending resistance and give good results. However in the process of applying this method, the influence of many factors such as concrete quality, environmental conditions, control and adjustment of the stress in the materials, the effective length of the beam…, are not considered while these factors have a significant impact on the efficiency of reinforced beams.

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Investigation of cable stayed bridge behavior when changing cable tension

Dr. NGUYEN HUU HUNG

In cable stayed bridge, the stay cable is an important member that participate in making preeminence of this structure. Furthermore, the tension in the stay cables is an important components in the promotion of the advantages of cable-stayed bridge. The previous studies often focused on optimizing the tension of stay cables. To clarify the effect of optimizing of the tension in the stay cables, this paper analyzed the influence of changed stay cable tension to the forces internal, stress and displacement of members of cable-stayed bridge. The paper used finite element method to analyze the structure of a cable-stayed bridge. The results presented in the paper show more details of the influence of tension in the stay cables to internal forces, stresses and displacement of girder with increasing and decreasing of tension.

Building Science and Technology Journal, N^0.4/2015, pp. 29-35

Thermal insulation for buildings

MEng. NGUYEN SON LAM, Dr. PHAM DUC HANH

This paper presents thermal insulation principle, factors relating to thermal insulation selection for buildings such as thermal efficiency, life cycle efficiency, fire safety…, design of thermal insulation and thermal insulation options for buildings included thermal insulation for building envelope (wall, roof).

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Parametric energy analysis to develop overall thermal transfer value equation in Vietnamese conditions

Dr. HOANG MINH DUC

Overal thermal transfer value have been used in many countries in the world, especially in the South East Asia, for evaluation energy efficiency of building envelope. Nevertheless, the application of overal thermal transfer value in Vietnam is limited. The aim of this article is to analyse and to propose the method to develope an equation for overal thermal transfer value in Vietnam conditions base on parametric energy analysis.

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Influence of granular ratio and time to the frictional properties between fresh concrete and steel pipe

MEng. VU VAN NHAN, Dr. NGUYEN THE DUONG

This paper presents some experimental results on the pumping parameters of some fresh concrete, including slump, frictional contact between concrete and steel pipe. These parameters are evaluated while considering time and granular's ratios. It is shown that the ratio between granular and fine materials has great influence to the workability and pumpability capacity of concrete. The optimal value of S/(S+G) in regard of pumping is in interval (0.45÷0.50). Futhermore, the trend of variation of friction between concrete and the inner surface of pumping pipe is not the same with the variation of slump.

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Mitigation and adaptation strategies in architectural movements adapting to climate change

Dr. ARCH. LE CHIEN THANG, MEng. NGUYEN SON LAM

Climate change begins to make its consequences in all fields, including the construction sector. Adapting to climate change becomes one of the main concerns in architectural design. Many friendly environmental movements in architecture contribute actively with different mitigation and adaptation strategies towards sustainability in construction environment. This paper will present these mitigation and adaptation strategies.

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On the anormal results from calculation of settlement of single piles by using the method of Vietnam standards of pile foundation design

Dr. TRINH VIET CUONG

The method of calculation of settlement of single piles in current standard of design of pile foundation in Vietnam TCVN 10304:2014 has been adopted from Soviet and Russian standards. The application of calculation method of the standard showed that in some cases the results of calculation are not in accordance with the laws of mechanics because the settlement covariates with the rigidity of the soil below pile point.

This report presents some calculation cases that gave anormal results and proposes the manner for determining the range of calculation parameters that return such results.

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Differences between calculating wind loads on pre-engineered steel buildings arcording to TCVN-2737-1995 and ASCE 7-2010

MEng. PHAM THI NGOC THU

In Vietnam, while local engineers use Vietnam standards, companies coming from abroad as Zamil Steel, PEB Steel, Kirby Steel,…use American ASCE standards to design structures of pre-engineered steel buildings. This will lead to certain differences in the calculation results. This article analyzes differences in determining wind loads on steel frames between two system of standards and raises some issues to be considered when applying ASCE standards in Vietnam condition.

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