

ABSTRACTS OF PAPERS IN ENGLISH

■ BEHAVIOR ANALYSIS OF CONCRETE FILLED STEEL BOX COLUMNS BY USING NONLINEAR FINITE ELEMENT METHOD

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ABSTRACT

Being economical and performing very well under cyclic (seismic) loads, steel sections filled with concrete have had a large application in structural buildings. Extensive studies and experiments have been conducted on such members to investigate the influence of different parameters and loading on the behavior of these structural components.

In this paper, at first based on the data available from previous experiments and studies, the behavior of composite columns is discussed. Then,

the results of non-linear finite element analysis of thin-walled steel sections filled with concrete are presented. Finally, a comparison between the finite element analysis results and the experimental data available on the specimens is made. Then, using trial and error method, the finite element model is calibrated. The capacities of the sections are also calculated based on LRFD design method and the results are compared with the two sets of already available data.

Because of the increase in the use of high strength materials in structures, the effect of the increase in concrete and steel strengths has been discussed in this paper. Also, the effects that the change in the thickness of the steel shell may have had on the behavior of composite columns are argued.

In the finite element model, solid elements for the concrete core, shell elements for the steel section and contact element for the interface were hired to create a true representation of the member. Contact elements were used to model the

bond between the concrete core and the steel shell.

APPLICATION OF NESTED LOGIT MODEL IN TIME AND HISTORY DEPENDENT HOME-BASED ACTIVITY - DESTINATION CHOICE

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ABSTRACT

In this study, time and history dependencies of activity-destination home-based choices are investigated. Nested logit model is regarded as an appropriate tool to link activity and destination choices through the accessibility concept. The results indicate that destination choice model structure includes time of day, destination characteristics, and accessibility to destination opportunities variables, in addition to the traditional variables like origin- to-destination distance and destination attraction. Activity choice models depend on time of day, activity history, and socio economic variables. The models goodness-of-fit indicators for shopping, recreation and personal business activity choices are very satisfactory.

EFFECTS OF FLUID VISCOUS DAMPERS ON SEISMIC DESIGN AND RETROFIT OF R.C. BUILDINGS

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ABSTRACT

Fluid viscous dampers have been used more recently to improve seismic behavior of existing and or new buildings by dissipating energy through heat transfer.

This paper presents an analytical evaluation of fluid viscous dampers used as additional diagonal braces in reinforced concrete frame structures. To this end, a series of inelastic time-history analysis of several frames incorporating these dampers were performed. The frames include three 1-story, three 5-story and three 10-story that have been analyzed under ElCentro, MexicoCity and Oakland earthquakes.

A parametric study about the damper specification has shown that the parameter of this study is damping constant of dampers.

The study demonstrates that the dampers can reduce inelastic deformations and thus reduce displacements and damages of structure. Although, total base shear may increase to some extent, the internal shear forces in the original system are reduced.

FLEXIBILITY IN WATER RESOURCES PLANNING AND MANAGEMENT

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ABSTRACT

Most of the mathematical models, which are used for operating water resources systems in Iran, do not include proper tools for incorporating the variations in different components of these systems. The previous studies have shown that some of the most important parameters affecting water resources systems and the performance of operating

rules and policies, such as water demands, hydrologic, qualitative, environmental, and even physical characteristics of reservoirs and downstream rivers, change significantly over the years. Assumptions made for simplifying hydraulic systems and ignoring the uncertainties have lowered the performance of operating models. These shortcomings show the need for flexible algorithms and models for water resources operation. In this paper, different aspects of developing such models and policies for water resources operation are discussed and some of the most important sources of uncertainty are demonstrated. The outline of a flexible algorithm for sustainable operation of water resources is also presented and different models, which can be used in this framework, are recommended and discussed.

STUDY OF HYDRAULIC FRACTURING IN CORE OF EARTH AND ROCK-FILL DAMS

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ABSTRACT

Hydraulic fracturing can be described as the conditions leading to creation and propagation of cracks of fissures in soil mass as a result of excessive fluid pressure.

In this paper, based on Mohr-Coulomb criteria for shear mode and maximum tensile strength criteria for tensile mode, the hydraulic fracturing has been predicted with respect to the soil properties.

Theoretical equations have been developed implying both total and effective stress. A new

technique for hydraulic fracturing tests was developed based on the use of hollow cylindrical specimens prepared with a standard procedure.

The results of the experimental study were compared with the hydraulic fracturing pressure derived from theoretical solution. It has been determined that in low confining pressure, tensile failure occurred rather than shear failure and in high confining pressure, failure was observed in shear mode. The linear relation between hydraulic fracture pressure and confining pressure was also confirmed by experimental results.

DESIGN PROCESS OF AN ESSENTIAL THIN SHELL CONCRETE STRUCTURE

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ABSTRACT

Today the design process for a special structure compared with the design process in the past is more mature. The interaction of science and technology has a great impact on developing the ground and preparing the foundation for better understanding of the engineering problems and also has introduced more advanced solutions to overcome the obstacles. Combination of art, experience, science and technology has led to optimized design and sound engineering practice.

In this article, the design steps of special thin shell concrete structure in different stages are discussed. Different studies along with variety of static, dynamic and non-linear analyses, wind tunnel test and small scaled structural test are briefly discussed.

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**STATIC ANALYSIS OF CONCRETE
FACED ROCKFILL DAMS USING
NONLINEAR MATERIAL BEHAVIOR**

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ABSTRACT

Analysis results of a typical concrete faced rockfill dam under self-weight and water pressure loads using nonlinear constitutive model for rockfill material and considering step by step construction stages is presented. The analysis is based on a computer program developed using main body of ANSYS program and a subroutine is written to add the critical state behavior model to the software. Two common problems are solved for evaluation of the software and then a typical CFR dam is modeled and analyzed. Results of analysis show the nature of plastic deformation distribution in the dam body and effect of water level variation on concrete face slab response.

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**TECHNICAL AND ECONOMICAL
COMPARISONS OF RUBBER DAM
WITH OTHER ALTERNATIVES**

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ABSTRACT

Rubber dam is a small dam which is used in rivers as a diversion dam. The only metal parts of these dams are the water proof anchor bolts. Sluice gates as well as hoisting devices are not necessary for their operation and the effect of foundation behavior on these structures is insignificant. Moreover, they do not influence the morphology of the river and require less expensive stilling basin. The cost of dam depends mainly on the width of dam and the labor fees for installation. The average cost per length in meter is approximately 15000 US dollars at the present time. It is necessary to attain adequate knowledge to design and operate the control system of this structure.

International Conference on

HYDRAULICS OF DAMS AND RIVER STRUCTURES

26 - 28 April 2004

Tehran - Iran

Announcement and Call For Papers

Invitation

Hydraulic structures and river works are vital to the progress of a country. This has become all more significant in this century owing to the scarcity of water to meet the needs of the ever increasing population of our developing world. The main objective of this conference is to bring together researchers and practitioners to exchange and express their views and experiences on hydraulics of structures associated with rivers and dams. This would lead to a state of the art improvement in the current design of hydraulic structures, especially in developing countries.

The organizing committee is honoured to invite all interested scholars to submit papers and participate in this international event.

Conference Topics

We invite design experience and research investigation utilizing theoretical or numerical work, field data or laboratory experiments. Practical papers including new design techniques or methods of operation, monitoring and maintenance of hydraulic structures are equally welcome. The main topics are:

A: Hydraulic Structures

- Air-water flows
- Hydraulic transients
- Swirling flows
- Hydrodynamic forces
- Flow-induced vibrations
- Scouring below outlets
- Sedimentation at intake structures
- Reservoir sedimentation and flushing
- Innovative spillways

B: River Structures

- Hydrodynamics of river flow around structures
- Scouring and sediment deposition around structures
- River structures in ephemeral rivers
- Operation of hydraulic structures in flashy rivers
- River response to hydraulic structures
- River flood control and management
- Hydroinformatic applications

Call for papers

Papers in the above or related fields are solicited. Abstracts, written in plain English, should be limited to 500 words. They may be submitted Via e-mail preferably in Microsoft Word format. The Scientific Committee will review all contributions. Instruction for final papers will be sent along with notification of acceptance according to the timetable.

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