Cornel Ilinca

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WORK EXPERIENCE

01/10/2001 – CURRENT Bucuresti, Romania
UNIVERSITY ENGINEERING LECTURER TECHNICAL UNIVERSITY OF CIVIL ENGINEERING BUCHAREST

Research in Hydrologic and Water Resource Modeling, Hydraulic Structures, Earthquake Engineering and Natural hazards in coastal regions.
Teaching classes in Faculty of Hydrotechnics, Technical University of Civil Engineering of Bucharest.
Business or Sector Education | **Department** Hydrotechnical Engineering |

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EDUCATION AND TRAINING

01/10/1997 – 15/04/1998 Bucuresti, Romania
DOCTOR OF ENGINEERING Technical University of Civil Engineering of Bucharest

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LANGUAGE SKILLS

Mother tongue(s): **ROMANIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	B2	B2	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Mathcad | MATLAB | HEC-RAS | HEC-HMS | AutoCAD | QGIS | Microsoft Office | C++ | SAP2000 | GeoStudio

ADDITIONAL INFORMATION

PUBLICATIONS

Parameter Estimation for Some Probability Distributions Usedin Hydrology – 2022

Authors: Cristian-Gabriel Anghel, Cornel Ilinca

Abstract

Estimating the parameters of probability distributions generally involves solving a system of nonlinear equations or a nonlinear equation, being a technical difficulty in their usual application in hydrology. The choice of probability distributions for the calculation of extreme values in hydrology is, in most cases, made according to the ease of calculation of the estimated parameters and the explicit form of the inverse probability function. This article presents improved approximations and, in some cases, new approximations for the estimation with the method of ordinary moments and the method of linear moments, which are useful for the direct calculation of the parameters, because the errors in the approximate estimation are similar to the use of iterative numerical methods. Thirteen probability distributions of two and three parameters frequently used in hydrology are presented, for which parameter estimation was laborious. Thus, the approximate estimation of the parameters by the two methods is simple but also precise and easily applicable by hydrology researchers. The new and improved approximate forms presented in this article are the result of the research conducted within the Faculty of Hydrotechnics to update the Romanian normative standards in the hydrotechnical field.

Flood-Frequency Analysis for Dams in Romania – 2022

Authors:Cornel Ilinca, Cristian-Gabriel Anghel

Abstract

Accurately determining the maximum designed water discharges of dams is extremely important, considering the economic costs of carrying out these types of hydrotechnical works and the possible disastrous consequences resulting from their incorrect design. This article describes and applies probability distributions used in hydrology, with some recommended by Romanian legislation standard NP 129-2011. The methods for estimating the parameters presented in this article, as well as the establishment of directions for correlating the normative with international regulations, resulting from the research on many rivers with different characteristics, conducted within the Faculty of Hydrotechnics, were completed with specialized computer applications for applying the normative. In this article, two case studies reflecting this research are presented. The verification of the proposed recommendations, on rivers with hydrographic basins with different physiographic characteristics, confirmed the opportunity to implement rigorous and simple criteria. The presentation of the quantile form of some distributions (especially Pearson III) and of the expressions of moments (central and raw) of high order, as well as the presentation of the frequency factors of each analyzed distribution necessary to calculate the confidence interval, constitute novelties, thus facilitating the ease of use of these distributions.

Breach Forming Scenarios at Concrete Faced Rock-fill Dams – 2019

Authors: Alina-Ioana Popescu-Busan, Cornel Ilinca, Serban-Vlad Nicoara, Albert Titus Constantin, Cristian Gabriel Anghel

Abstract

Rock-filled dams with reinforced concrete facing, as the proposed study case of Bolboci Dam on the River Ialomiţa, Dâmboviţa County, centre Romania, are characterized by a very high operation safety. On the international level, there is no record of failed concrete faced rock-fill dams. However, during their usage there have been several incidents mainly due to the unsatisfactory behaviour of the reinforced concrete masks. Specifically, in an ICOLD statistic that presented 17 cases of damages to rock-fill dams with reinforced concrete facing, 14 were due to the unsatisfactory behaviour of the reinforced mask. The other 3 cases were due to piping phenomena or percolation through the dam foundation or the lake's shore. The failure scenarios of this dam type, Bolboci Dam including, can be as follows: the retaining structure over-spilling during floods due to an insufficient or poor operation of top and/or bottom dischargers - the overflow gradually erodes the body of the dam until the breach occurs; concentrated infiltrations with a high gradient through the dam body as a result of a serious malfunction in the concrete facing sealing, with material carving in, leading to breaches in the dam body; piping in the dam foundation / side banks that could finally lead to slippage and finally dam failure (improbable due to the existing geotechnical conditions); overpassing the safety guard of the dam's crown leading to the dam over-discharging as a result of irreversible excessive subsidence due to exceptional incidents. There have been studies on three statistical methods on how characteristical breaches occur: MLM Empirical Method, Washington State and Froehlich. The Froehlich method has been endorsed and modified, because Bolboci Dam is a well built, well executed and a well employed dam. The failure hypotheses of the dam were done with applications using MathCAD software, their algorithm being based on the finite differences method. It must be specified that the statistical approach of dam failure is a trap, due to the fact that it is well know they are a work of one of a kind engineering art. This fact shows the difficulty of the elaboration of the failure scenarios and the need of a sensitivity study for the comparison of the scenarios. The results show that the failure of rock-filled

dams with reinforced concrete facing is highly improbable and leads to small flows with a sluggish evolution of the breaches.

Study for Selecting the Solution of a Dam's Discharge Chute Canal – 2017

Authors: FelipeCisneros, ErwinBarahona, CornelIlinca, CristianAnghel

Abstract

Some hydraulic studies to find an adequate solution for a discharge chute canal are presented in this paper. Tha chute canal is appropriate work of the Lechugal 2 earth dam (H=20 m), which is part of a large irrigation system from Ecuador, presently under construction.

Studies have consisted in experiments on hydraulic model of the chute canal built at geometrical scale 1:35 and by numerical simulations in one-dimensional steady flow running HecRas software. In first stage numerical model was calibrated based on experiment results and in second stage other three constructive variants of the chute canal were analysed numerically in order to improve the solution settled by hydraulic model.

The technical performances of each variant settled by these experimental and numerical studies follow to be completed with economical analyses which will allow designer to choose the best solution for discharge chute canal.

Assessment Concerning the Domain of Applicability of Protodiakonov Method in Calculus of Underground Structures

– 2017

Authors: Adrian Popovici, Cornel Ilinca, Cristian-Gabriel Anghel

Abstract

The sectional stresses (M, N) in a gallery lining are computed comparatively numerical by FEM taking into account the interaction underground structure - surrounding ground and analytical by Protodiakonov method. The last method is based on coincidence arch born in ground over gallery. Comprehensive analyses allow to settle the domain in which Protodiakonov method can be applied as well as the conditions in which discharge arches appear in ground above underground or embedded structures. The study is available for galleries (tunnels) built so that their lining takes loads from undeformed ground (rock) mass surrounding gallery, existent before excavation.

The Effects of the Structure—Foundation Interaction in the Structural Response of a TBM Gallery – 2016

AUthors: Cisneros Felipe, Juan Pablo Cabrera, Juan Gabriel Barbecho, Adrian Popovici, Cornel Ilinca

Abstract

The effects of the interaction between a gallery lining and surrounding ground are evaluated. The gallery is circular with constant thickness and surrounding ground as geotechnical characteristics is soft one. Two types of ground are successively considered with bulk modulus K = 9,260 kPa and K = 4,630 kPa. The analysis is carried out for a gallery with 3.80 m inner diameter and 25 cm thickness. This under construction is part of the irrigation system of the "Los Ríos" county (Ecuador). Comprehensive computations in various hypotheses pointed out the significant effects of the interaction. The sectional stresses (M, N) in the gallery lining embedded in soft ground depend mainly of the gallery depth versus ground surface. Contrary, the mechanical characteristics of the surrounding ground resulted to have little influence.

Ghid de bune practici în vederea planificării şi implementării investiţiilor din sectorul microhidrocentrale

– 2016

Authors: Marius Nistorescu, Alexandra Doba, Marcel Țîbîrnac, András Attila Nagy, Diana Cosmoiu, Gavril Marius Berchi, Cornel Ilinca

Prezentul ghid de bune practici este elaborat de EPC Consultanţă de mediu în cadrul contractuluiîncheiat cu Asociaţia „Grupul Milvus" pentru „Elaborarea a 3 Ghiduri în vederea planificării şiimplementării proiectelor în sectoarele: Infrastructură de transport, Exploatare demicrohidrocentrale şi Parcuri eoliene", parte integrantă a proiectului "Natura 2000 şi DezvoltareRurală în România" implementat de către WWF Programul Dunăre Carpaţi România, alături departenerii săi WWF Elveţia, Asociaţia „Grupul Milvus", Ecotur şi Fundaţia ProPark.Redactarea ghidului a fost coordonată de Marius Nistorescu, Alexandra Doba şi Marcel Țîbîrnac.Experţii care au contribuit la redactarea ghidului sunt: Nagy András Attila, Diana Cosmoiu, CornelIlinca, Gavril Marius Berchi.

The Influence of Soil Characteristics in Seismic Response of Embedded Structures – 2015

Authors: Adrian Popovici, Cornel Ilinca, Răzvan Vârvorea

Abstract

The seismic response of a large wastewater collector box-type is performed by spectral analysis and direct time integration methods. The influence of mechanical characteristics of surrounding soil on structure seismic response is investigated. For this purpose the soil bulk modulus was successively considered 40,000 kPa and 80,000 kPa. The study points out the kinematic interaction soil-buried structure is usually

more important than inertial interaction. Over wastewater collector is placed a river channel with 2.30 m deep water. The analysis shown the water from river channel led to significant increase in structure sectional stresses during seismic action.

Influence of Dynamic Analysis Methods on Seismic Response of a Buttress Dam – 2014

Authors: Adrian Popovici, Cornel Ilinca, Răzvan Vârvorea

Abstract

The seismic response of a large wastewater collector box-type is performed by spectral analysis and direct time integration methods. The influence of mechanical characteristics of surrounding soil on structure seismic response is investigated. For this purpose the soil bulk modulus was successively considered 40,000 kPa and 80,000 kPa. The study points out the kinematic interaction soil-buried structure is usually more important than inertial interaction. Over wastewater collector is placed a river channel with 2.30 m deep water. The analysis shown the water from river channel led to significant increase in structure sectional stresses during seismic action.

DINAMICA STRUCTURILOR ŞI INGINERIE SEISMICĂ APLICAŢII VOL I. CONSPRESS BUCUREŞTI 2011 – 2011

Authors: Adrian Popovici, Cornel Ilinca

Abstract

Lucrarea "Dinamica structurilor şi Inginerie Seismică. Aplicaţii." se adresează în special studenţilor din anii III şi IV de la Facultatea de Hidrotehnică din Universitatea Tehnică de Construcţii Bucureşti – secţiile de Inginerie Sanitară şi Amenajări Hidrotehnice – dar poate fi în egală măsură utilă studenţilor de la alte facultăţi de inginerie civilă cât şi inginerilor proiectanţi în construcţii.