



**3 ALTARINDA ROAD, SUITE 203**

**ORINDA, CA 94563**

**PHONE: 925-253-3555**

**FAX: 925-253-3525**

**EMAIL: [YGHANAAT@QUESTSTRUCTURES.COM](mailto:YGHANAAT@QUESTSTRUCTURES.COM)**

**WEBSITE: [WWW.QUESTSTRUCTURES.COM](http://WWW.QUESTSTRUCTURES.COM)**

---



**DR. YUSOF GHANAAT**

**SPECIALTY/SKILLS:**

Structural-Earthquake Engineering, Seismic Design, Dam Safety Evaluation, Hydraulic Structures, Risk Assessment, Seismic Fragility, Non-linear Numerical Modeling, Structural Dynamics, Earthquake Ground Motion

**GEOGRAPHIC BASE:** Orinda, California

**TYPE OF COMPANY:** S-Corporation

---

**RESUMÉ**

**DR. YUSOF GHANAAT**

**EDUCATION**

Ph.D. Civil Engineering (Structural),  
University of California at Berkeley  
M.S. Civil Engineering (Structural),  
University of California at Berkeley  
B.S. Mechanical Engineering,  
Sharif University of Technology, Tehran

**PROFESSIONAL  
QUALIFICATIONS**

Registered Professional Engineer, California

**PROFESSIONAL  
SOCIETIES  
PROFESSIONAL  
COMMITTEES**

Member, American Society of Civil Engineers  
Member, Association of State Dam Safety Officials  
Member, Earthquake Engineering Research Institute  
Member, Seismological Society of America  
Member, Structural Association of Northern California  
Member, United States Society on Dams  
Member, Committee on Earthquakes

**PRINCIPAL  
PROFESSIONAL  
DISTINCTIONS**

Co-recipient of the US Army Corp of Engineers (USACE), Chief of Engineers, “2002 Design and Environmental Honor Award,” in connection with Design and Construction of Seven Oaks Dam Intake Tower, California

Invited Speaker – in connection with seismic hazard and seismic design of Feledia RCC Dam in Cali, Colombia, March 9, 2011.

Invited Speaker – 2009 FERC Western Regional Dam Safety Forum, San Francisco, California

Invited Speaker – 39<sup>th</sup> US-Japan Joint Panel Meeting on Winds and Seismic Effects, Tsukuba, Japan, May 14-19 May 2007

Invited Speaker – 25<sup>th</sup> United States Society on Dams Annual Meeting and Conference Seismic Workshop, Salt Lake City, Utah, June 6-10, 2005

Keynote Speaker – 3<sup>rd</sup> US-Japan Workshop on Advanced Research on Earthquake Engineering for Dams, San Diego, California, June 22-23, 2002

Invited Speaker “*Seismic Design of Intake Towers*” – USACE’s 2001 Infrastructure Systems Conference, Reno, Nevada, August 14-16, 2001

Invited paper “*Structural Performance & Damage Criteria for Concrete Hydraulic Structures*” – USACE’s 2001 Infrastructure Systems Conference, Reno, Nevada, August 14-16, 2001.

Consultant to the USACE’s Assessment Team on Technical Review of the East Span of Oakland-San Francisco Bay Bridge  
“*Replacement or Retrofit Alternative,*” June-October 2000

Invited Speaker – 2<sup>nd</sup> US-Japan Workshop on Advanced Research on Earthquake Engineering for Dams, Tokyo, Japan, May 7-8, 1999

Invited Speaker – US-China Workshop on Earthquake Behavior of Arch Dams, Beijing, China, June 1-5, 1987

**PROFESSIONAL  
EXPERIENCE AND  
BACKGROUND**

**PRESIDENT AND PRINCIPAL, QUEST STRUCTURES, INC., ORINDA, CA,  
SEPTEMBER 1987 TO PRESENT**

In his more than 3 decades of practice, Dr. Ghanaat has been involved with a broad range of structural, earthquake, dam, and geotechnical engineering projects. He has participated and directed two decades of field measurements in the United States and China investigating dam-water and dam-foundation interaction effects on earthquake response of dams. Dr. Ghanaat has served on many technical advisory panels on seismic design and dam safety projects in the United States and abroad providing advice to government agencies, public utilities, private owners, and the World Bank. His consultation practice has often involved a variety of issues in structural and geotechnical earthquake engineering, structural dynamics, design and performance criteria,

seismic hazard assessment, earthquake ground motion specifications, risk analysis, nonlinear numerical modeling, fluid-structure interaction, soil-structure interaction, and concrete expansion due to alkali-aggregate reaction.

Dr. Ghanaat has reviewed, managed, and directed safety evaluations and advanced linear and nonlinear numerical modeling for more than 60 new and existing dams, 20 inlet/outlet towers and spillway structures, and numerous other hydraulic structures including navigation locks, levee floodwalls, tunnels, and underground facilities for static and seismic effects. He has authored many engineering manuals for the US Army Corps of Engineers (USACE) and arch dam analysis guidelines for the US Federal Energy Regulatory Commission (FERC).

#### **TECHNICAL REVIEWS AND ADVISORY PANELS, 1994 TO PRESENT**

Since 1994, Dr. Ghanaat has served on more than 40 technical review and advisory panels on design of new dams; navigation locks, and outlet works; safety evaluation and risk assessment of existing dams and related hydraulic structures; design and construction of seismic remediation for dams and outlet structures; major cantilever and suspension bridges; and dam raise projects. Examples of his current advisory panel projects include:

- Participatory Peer Review Panel (PPRP) – TVA nuclear related flood risk evaluation from multiple seismic-induced dam failures
- Independent Board of Consultants (BOC) – Alaska Energy Authority Susitna-Watana Hydroelectric Project, Alaska
- World Bank Dam Safety Advisory Panel (DSAP) – Tina River Hydropower Development Project, Solomon Islands
- World Bank Project Review Panel (PRP) – Upper Cisokan Pumped Storage Hydropower Project, Indonesia
- Bureau of Reclamation's Consultant Review Board (CRB) – Boca Dam, Truckee, California

#### **RESEARCH**

***Seismic Fragility of Gravity Dams.*** Principal in charge of development of seismic fragility for overflow and non-overflow gravity dam sections using advanced nonlinear analysis with Latin Hypercube Simulation methodology. The research is funded by the US Army Corps of Engineers, Headquarters, Washington D.C. (2009-2014).

***Research on Performance of I-Walls used as Flood Control Barriers.*** Principal in charge of numerical investigations of flood I-

walls in support of the USACE's Phase-III research efforts to establish guidance for performance evaluation of I-walls across the nation by expanding on the current knowledge learned from Hurricane Katrina (2009-10).

**National Science Foundation: Experimental Investigation of Concrete Dams.** Initially as a consultant to the University of California at Berkeley and later as the principal investigator conducted 20 years of field measurements to study dam-water and dam-foundation interaction effects on earthquake response of arch dams. The investigation included Monticello Dam in California and Xiang Hong Dian, Quan Shui, Dongjian, and Longyangxia Arch Dams in China (1980-00).

**Reservoir Bottom Absorption.** Developed and applied two novel techniques for in-situ measurement of reservoir bottom absorption, a parameter that can significantly influence earthquake response of concrete dams. The methods were applied to Dongjian and Longyangxia Arch Dams in China and Monticello, Pine Flat, Hoover, Glen Canyon, Morrow Point, Crystal, and Folsom Dams in the U.S (1994-95)

## ENGINEERING MANUALS

Dr. Ghanaat has authored/co-authored the following engineer manuals for the US Army Corps of Engineers (USACE):

- **EC 1110-2-6000**, "*Selection of Design Earthquakes and Associated Ground Motions*,"
- **EM 1110-2-6053**, "*Earthquake Design and Evaluation of Concrete Hydraulic Structures*,"
- **EM 1110-2-6051**, "*Time History Dynamic Analysis of Concrete Hydraulic Structures*,"
- **EM 1110-2-6050**, "*Response Spectra and Seismic Analysis of Hydraulic Structures*,"
- Chapters 6 & 7 of **EM 1110-2-2201**, "*Engineering and Design: Arch Dam Design*,"
- **ITL-93-1**, "*Theoretical manual for Analysis of Arch Dams*,"
- **EM 1110-2-2400**, "*Structural Analysis and Design of Intake Structures for Outlet Works*,"
- Review and consultation on development of **EP1110-2-12**, "*Seismic Design Provisions for RCC Dams*,"
- Developed "**Chapter 11**, *Arch Dams of FERC Engineering Guidelines for the Evaluation of Hydropower Projects*."