

# Construction Cost Estimating

## Purpose and Background

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This seminar gives practical guidance on construction project cost estimating, cost control, and claims analysis. Hundreds of participants have saved time and money on their projects by applying the principles and techniques set forth in this dynamic seminar. In two intensive days, you will follow the construction cost estimating process for both architectural building lump sum estimates and heavy civil unit price estimates. Information technology tools that can be used in estimating will also be discussed.

Particular attention is paid to the development of pricing data and understanding the perspective of owners, architects, engineers, bidders, contractors, subcontractors and other concerned parties with regard to quantifying the cost of a project's scope of work. Special attention is also focused on the how cost estimates are affected when a project is delivered using alternative project delivery methods such as design-build or CM-at-Risk. The seminar is lecture/discussion format and includes brief case studies that illustrate many of the seminar's key points.

## Seminar Instructor

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**Douglas D. Gransberg, Ph.D., P.E., C.C.P., F.RICS, M.ASCE**, is the president and founder of Active Continuing Education Systems, LLC., a firm that specializes in providing professional continuing education services using a variety of delivery mediums from in-person to guided online modes. Gransberg has been an ASCE instructor since 1996. ACES offers a full-range of project management and construction engineering curricula and has furnished coursework to public and private clients in the US and overseas.

He is also the president of Gransberg & Associates, Inc. a construction management/ project delivery consulting firm. The firm was founded in 1996 and provides RFQ/RFP development services to public agencies, as well as CMGC and DB proposal development services to engineers and consultants. G&A, Inc. has been called on to assist with projects throughout the U.S. and Canada, as well as in New Zealand, Okinawa, Latin America, Europe, and the Middle East. The firm specializes in the development of project management services for complex mega-projects.

Dr. Gransberg retired in 2017 as a professor of construction engineering at Iowa State University, where he held an endowed research chair for 5 years. He received both his B.S. and M.S. degrees in Civil Engineering from Oregon State University and his Ph.D. in Civil Engineering from the University of Colorado at Boulder. He is a licensed Professional Engineer in Oklahoma, Texas and Oregon, a Certified Cost Engineer, a Designated Design-Build Professional, and a Fellow of the Royal Institution of Chartered Surveyors in the UK.

Before moving to academia in 1994, he spent over 20 years in the U.S. Army Corps of Engineers, retiring at the rank of lieutenant colonel. In his final posting, Dr. Gransberg was the Europe District's Area Engineer stationed in Ankara, Turkey where he managed an annual design and construction program that exceeded \$200 million. He teaches courses in integrated project delivery, cost estimating, project controls, and project management. His research is centered in the delivery of infrastructure/ transportation projects.

Dr. Gransberg led the efforts to develop the AASHTO *Guidelines for CMGC project delivery* and *Guidebook for Alternative Quality Management*. He was one of the co-authors of the AASHTO *Guide for Design-Build Contracting*, and is currently developing the AASHTO *Guide for Managing Geotechnical Risk in Design-build Projects*, and the second edition of the AASHTO *Partnering Handbook*. He is the author of 4 books on construction management topics and over 200 articles, conference papers, and other publications.

- For group training, contact John Wyrick (JWyrick@asce.org) or Stephanie Tomlinson (STomlinson@asce.org)

## Summary Outline

### DAY ONE

#### MODULE – 1

Introduction to Cost Engineering  
Estimating fundamentals  
Organizing the estimate  
Work breakdown structure  
Quantity Surveying

#### Module– 2

Estimating Manuals and Bid Tabs  
Elements of pricing  
Indexing for scale & complexity  
Escalation

#### MODULE– 3

Feasibility Estimating  
Generating initial scope of work  
Schedule & sequence of design work  
Developing early construction cost factors

#### MODULE– 4

Conceptual Estimating  
Cost scoping the conceptual design  
Schedule & sequence of construction  
Developing early feature estimates  
Developing assemblies

#### MODULE– 5

Detailed Estimating - Vertical  
Cost scope of the effort  
Quantity take-off  
Schedule of values

#### MODULE– 6

Special Estimates - Vertical  
Alternative project delivery – design-build, CM-at-risk  
Contingencies and allowances  
Estimating sustainable design (LEED)

### DAY TWO

#### MODULE—7

Unit Price Estimating  
Components of the unit price  
Contractor's perspective  
Cost scoping public works projects  
Unbalancing/Ethics

#### MODULE—8

Pricing with Bid Tabulations  
Bid tab analysis  
Scale issues  
Competition issues

#### MODULE—9

Parametric Estimating  
Developing parametric scope factors  
Developing parametric pricing sets  
Statistical analysis for pricing

#### MODULE—10

Detailed Estimating – Horizontal  
Quantity take-off process  
Sequence of the estimate  
Earthwork/excavation  
Change order estimates

#### MODULE—11

Production-based Estimating  
Develop crew costs  
Linear scheduling  
Setting incentive/disincentive schemes

#### MODULE—12

Special Estimates – Horizontal  
Risk-based estimates  
Cost modeling  
Simulations to set rational contingencies

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