

# **54th Annual Meeting of the AACE International 2010**

## **The Authority for Total Cost Management**

**Atlanta, Georgia, USA  
27-30 June 2010**

**Volume 1 of 2**

**Editor:**

**Marvin Gelhausen**

**ISBN: 978-1-61738-803-3**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2010) by AACE International, the Authority for Total Cost Management  
All rights reserved.

Printed by Curran Associates, Inc. (2010)

For permission requests, please contact AACE International, the Authority for Total Cost Management at the address below.

AACE International, the Authority for Total Cost Management  
209 Prairie Avenue, Suite 100  
Morgantown, WV 26501-5934 USA

Phone: 800.858.COST(2678) | +1.304.296.8444  
Fax: 1.304.291.5728

[www.aacei.org](http://www.aacei.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## VOLUME 1

### ADVERSE CONDITIONS (ADV)

<b>ADV.01 and ADV02: (Panel Discussion – Part 1) Project Controls for Disaster Restoration and Reconstruction and (Panel Discussion – Part 2) Planning for Post Disaster Project Controls.....</b>	1
<i>Edward E. Douglas III, Randy R. Rapp</i>	

### BUILDING INFORMATION MODELING (BIM)

<b>BIM.01: Underdeveloped and Underutilized: Cost Estimating in BIM .....</b>	13
<i>Tamera Lee McCuen</i>	
<b>BIM.02: Integrated Cost Budgeting and Estimating Model for Building Projects .....</b>	22
<i>Sarmad Al-Mashta, Sabah Alkass</i>	
<b>BIM.03: BIM: Sharing Project Data Reduces Conflict .....</b>	37
<i>William R. Zollinger III, David L. Sutton, Gary R. Montler, Mark M. Seifried</i>	

### CLAIMS AND DISPUTE RESOLUTION (CDR)

<b>CDR.01: Demystifying the Law of Lost Productivity Claims .....</b>	54
<i>Mark A. Sgarlata, Christopher J. Bracco, Christopher Michael Anzidei, Adam M. Tuckman</i>	
<b>CDR.02: Which Critical Path: As-Planned, Contemporaneous or As-Built?.....</b>	82
<i>Mark F. Nagata</i>	
<b>CDR.03: CPM's Contribution to Forensic Schedule Analysis .....</b>	93
<i>Jeffery L. Ottesen, Greta A. Martin</i>	
<b>CDR.05: Revisiting Lost Productivity: A Primer and Update for the Industry.....</b>	105
<i>John J. Ciccarelli, Michael J. Bennink</i>	
<b>CDR.06: (Panel Discussion) The As-Built Critical Path – Quest or Discovery?.....</b>	119
<i>John C. Livengood, Jeffery L. Ottesen</i>	
<b>CDR.07: Practical Issues in Loss of Efficiency Claims .....</b>	132
<i>Robert A. Dieterle, Thomas A. Gaines</i>	
<b>CDR.08: Evidence Issues in Forensic Use of CPM Scheduling.....</b>	143
<i>Fredric L. Plotnick</i>	
<b>CDR.10: The Pros and Cons of Using Dispute Review Boards.....</b>	155
<i>Kathleen M. J. Harmon</i>	
<b>CDR.11: The Spearin Doctrine Revisited .....</b>	162
<i>Jean-Paul Prentice</i>	
<b>CDR.12: Dealing With Cumulative Impact Claims .....</b>	174
<i>Emelyn Warde Martinez</i>	
<b>CDR.13: Differing Site Conditions – Why, What and How? .....</b>	190
<i>Faik Burak Evrenosoglu</i>	
<b>CDR.S01: Changing the Boundaries of Client/Contractor Shared Risk.....</b>	205
<i>Douglas Alan Findley</i>	

### COST AND SCHEDULE CONTROL (CSC)

<b>CSC.02: Budgeting for Federal Buildings Using Parametric Models .....</b>	219
<i>William H. Hunt, Peter Henry Morris</i>	
<b>CSC.03: Infrastructure Asset Life Cycle Cost Analysis Issues .....</b>	237
<i>Douglas D. Gransberg, Eric Scheepbouwer</i>	
<b>CSC.04: Influence of Green Building on Project Costs .....</b>	247
<i>John A. Kuprenas</i>	
<b>CSC.05: Project Baseline Management and Change Control.....</b>	256
<i>Steven W. Wageman</i>	
<b>CSC.08: Change Control That Saves Big Bucks .....</b>	269
<i>Dave Draper</i>	
<b>CSC.09: Performance Metrics Based on Forecast Variance – A Case Study .....</b>	281
<i>Logan Anjaneyulu</i>	
<b>CSC.10: Change is the Only Constant .....</b>	298
<i>Alexia A. Nalewaik</i>	

<b>CSC.S01: Value Engineering Applications in Construction .....</b>	308
<i>Thomas H. Neidecker</i>	
<b>CSC.S02: Where Has the Cost Focus Gone? .....</b>	322
<i>Trudi Bissett, John G. Buchan</i>	
<b>CSC.S04: Developing Subcontract Pricing as Applied to Building Construction .....</b>	335
<i>John Cheek</i>	
<b>CSC.S08: Maximizing Owner Value through Target Value Design.....</b>	347
<i>Herman Glenn Ballard, Peter Henry Morris</i>	
<b>CSC.S11: Comparative Analyses of Change Orders Costs in Transportation Construction.....</b>	362
<i>Duzgun Agdas, Ralph D. Ellis Jr., Charles R. Glagola</i>	
<b>CSC.S12: Controls and Audit Devices for Claims Management .....</b>	374
<i>Alexia A. Nalewaik</i>	
<b>CSC.S13: Assessment of Forecasting Techniques Used by Contractors in the Nigerian Construction Industry .....</b>	383
<i>Ibukun O. Famakin</i>	

## **PROFESSIONAL DEVELOPMENT (DEV)**

<b>DEV.01: Curriculum Development Based Upon TCM Framework.....</b>	393
<i>John Jeffrey Hannon</i>	
<b>DEV.02: Downstream Schedule Analysis for NON-Schedulers.....</b>	406
<i>Amanda M. Madl</i>	
<b>DEV.03: Increasing Productivity in a Volunteer Organization.....</b>	418
<i>William E. Kraus, Patrick Steven Ray</i>	

## **ESTIMATING (EST)**

<b>EST.01: Pitfalls of Early Estimates and Scope of Work.....</b>	432
<i>Kul B. Uppal</i>	
<b>EST.02: Web Technology – Centralized and Collaborative Estimating .....</b>	442
<i>Philip D. Larson, Stephen F. Williams</i>	
<b>EST.03: Avoid Cost Overrun for Megaprojects.....</b>	454
<i>Himansu Bhaumik</i>	
<b>EST.12: Mathematical Models of Contingency for Errors of Omission .....</b>	463
<i>Steven Davis, Yuan Peng</i>	
<b>EST.13: A Study on Nuclear Decommissioning Costs .....</b>	478
<i>Mark Mills</i>	
<b>EST.14: Modeling Projects' Scopes for Conceptual Cost Estimating .....</b>	491
<i>Alfredo F. Serpell</i>	
<b>EST.15: Estimating and Pre-Contracts Quantity Surveying .....</b>	503
<i>Paratharajan Natarajan Pille</i>	
<b>EST.17: Steel Fabrication Costs in China.....</b>	522
<i>Stephen O'Neill, Limor Rozmarin</i>	
<b>EST.S01: Developing a Long-Term Historical Cost Database .....</b>	535
<i>Robert Roy Honsinger, Joseph B. Martin, Bruce William Wallace, Scott Newell Wasley</i>	
<b>EST.S02: Estimate Conversion to Conceptual Model .....</b>	542
<i>Robert J. Coppo</i>	
<b>EST.S03: Infrastructure Cost Planning – Information System for Cost Prediction of Communal Infrastructure .....</b>	550
<i>Christopher Hagmann, Christian Stoy</i>	
<b>EST.S05: Estimating by Equipment Factors – A Recommended Practice .....</b>	558
<i>Desmond Orsinelli</i>	

## **EARNED VALUE MANAGEMENT (EVM)**

<b>EVM.02: Implementing an EVMS/Cost Controls System for FAA's TAMR Program.....</b>	574
<i>Mark Walden, Rohit Iyer</i>	
<b>EVM.04: Mitigation and Performance Recovery Using Earned Value.....</b>	584
<i>John C. Potter, Christopher W. Carson, Patrick M. Kelly</i>	
<b>EVM.S01: Monitoring Productivity with Earned Value Analysis – A New Approach.....</b>	595
<i>Aldo Dorea Mattos, Ricardo Delarue</i>	
<b>EVM.S02: Earned Value on Fixed-Price Projects .....</b>	602
<i>Carol J. Christensen-Day</i>	

## **GLOBAL PROJECTS (INT)**

- INT.S03: Project Development and Cost Estimating in Russia .....** 614  
*Stephen D. Weeks, Vijay S. Jambhekar*

## **OWNER ISSUES (OWN)**

- OWN.01: Why Owners Do What They Do.....** 627  
*Bernard A. Pietlock*

## **VOLUME 2**

- OWN.02: Front-End Engineering and Design: Influence Over a Project's Outcome .....** 643  
*James D. Whiteside II, Tyler Humes*
- OWN.03: Timely Time Extensions: The Owner's Duty .....** 660  
*John P. Orr*
- OWN.04: Obstacles in Implementing Project Controls in Small to Medium Sized Owner Companies.....** 672  
*Subhash Itagi*
- OWN.05: Integrated Project Controls: An Owner's Perspective .....** 683  
*David Andrew Lucas*
- OWN.06: Best Practices by Owners for Controlling Cost and Schedules on Large Projects.....** 697  
*Marlene M. Hyde, John P. Orr, Michael E. Peek*
- OWN.08: The Unexpected Cost of Contract Multiplier Calculation Methods.....** 710  
*Jake Ortego*
- OWN.09: Developing and Implementing a Project Knowledge Management System (PKMS).....** 721  
*Cristina Figueiredo, Ray S. Philippenko*
- OWN.S02: Building Commissioning for Energy Efficiency .....** 732  
*Neil D. Opfer, David R. Shields*

## **PROJECT MANAGEMENT (PM)**

- PM.01: Factors Affecting Subcontracting Strategies in Industrial Mega Projects .....** 741  
*Mahsa Taghi Zadeh, Janaka Y. Ruwanpura, Farshid Gholami*
- PM.02: Forecasting Construction Project Performance Using Monte-Carlo Simulation Approach.....** 766  
*Mohammad Ilbeigi, Gholamreza Heravi*
- PM.03: Cost Impact of Constructability Analysis in Mega Projects .....** 788  
*Farshid Gholami, Janaka Y. Ruwanpura, Mahsa Taghi Zadeh*
- PM.04: Top 10 Mistakes Made in Project Negotiations .....** 804  
*Joseph Arthur Lukas*
- PM.05: Managing Los Angeles \$40 Billion Transportation Program with P6 .....** 814  
*Julie K. Owen, Brian Criss*
- PM.06: Recovering a Troubled Telecommunications Project.....** 830  
*Thomas Bean*
- PM.07: Enterprise Project/Cost Management Systems Implementation – Lessons Learned .....** 861  
*Anthony Jerome Morris*
- PM.08: Expanded Facility Condition Assessment Becomes Strategic Facility Consulting.....** 871  
*Michael D. Dell'Isola, Benjamin Dutton*
- PM.09: Integrated Project Teams with Multi-Office Execution .....** 892  
*Pattita Brandell, Tanveer Nabi Ahmed, Janaka Y. Ruwanpura, Varuna Adikariwattage*
- PM.S02: Key Owner Decisions That Drive Project Success.....** 907  
*Stephen L. Cabano, Paul G. Williams*
- PM.S03: Strategic Partnership – An Imperative for Project Management in a Multiplayer Setting.....** 916  
*Gregory Osagie Akhibi*
- PM.S04: The Art of Construction Administration.....** 930  
*Jean-Paul Prentice, Virgil Hancock*

## **PLANNING AND SCHEDULING (PS)**

- PS.01: Schedule Quality Assurance Procedures.....** 942  
*Andrew Avalon, Curtis William Foster*
- PS.02: Line-of-Balance (LOB) Scheduling for Projects with Repetitive Work .....** 952  
*Ghulam Mujtaba Shaikh*

<b>PS.05: Rapid Recovery from Schedule Slippage (RRSS)</b> .....	968
<i>Faramarz Fred Rahbar</i>	
<b>PS.06: Does Correcting Out-of-Sequence Progress Improve the Schedule?</b> .....	985
<i>Timothy T. Calvey</i>	
<b>PS.07: Essentials of Early Planning for Megaprojects</b> .....	1000
<i>Himansu Bhaumik</i>	
<b>PS.08: Planning a Complex Project – An Under Appreciated Effort</b> .....	1009
<i>Christopher W. Carson, Glen R. Palmer</i>	
<b>PS.09: Linear Scheduling for Production Home Building</b> .....	1017
<i>Carla Lopez del Puerto, Douglas D. Gransberg</i>	
<b>PS.10: Thinking Enterprise with P6<sup>TM</sup></b> .....	1028
<i>Faik Burak Evrenosoglu</i>	
<b>PS.11: Lessons Learned – Schedule Development Using Primavera P6<sup>TM</sup></b> .....	1051
<i>Hannah E. Schumacher, Charlie Jackson</i>	
<b>PS.13: Managing Schedule Contingency</b> .....	1071
<i>Edward E. Douglas III</i>	
<b>PS.15: Rectification of CPM Schedules</b> .....	1081
<i>Ronald M. Winter</i>	
<b>PS.S01: Mitigation of Risks in Using Parallel Project Schedules</b> .....	1095
<i>Patrick M. Kelly, Christopher W. Carson</i>	
<b>PS.S03: Trending in CPM – An Outline for Development of a Recommended Practice</b> .....	1103
<i>Fredric L. Plotnick</i>	
<b>PS.S05: The Construction Schedule Log: Charting the Project Path</b> .....	1110
<i>Paul Levin, Mark Doran</i>	

## **DECISION AND RISK MANAGEMENT (RISK)**

<b>RISK.01: Alternate Methods for Integrated Cost &amp; Schedule Contingency Estimating</b> .....	1127
<i>John K. Hollmann</i>	
<b>RISK.02: Handling the Truth in Risk Management</b> .....	1137
<i>Kevin M. Curran, Michael W. Curran</i>	
<b>RISK.03: Integrated Cost and Schedule Risk Analysis: A Draft AACE Recommended Practice</b> .....	1153
<i>David T. Hulett</i>	
<b>RISK.04: Systemic Risk Management Using Lean Construction Methods</b> .....	1182
<i>Robert F. Wells</i>	
<b>RISK.08: Understanding Merge Bias in Schedule Risk Analysis</b> .....	1200
<i>Jeffrey Valdahl, Christopher P. Caddell</i>	
<b>RISK.09: A Comparative Study of Capital Project's Risk Development and Management</b> .....	1214
<i>Abhijnan Datta</i>	
<b>RISK.11: Schedule Risk Management for Pipeline Projects</b> .....	1226
<i>Renna Alqasrani, Brent Kitson, Richa Sahib</i>	
<b>RISK.14: Effect of Escalation on Large Construction Programs</b> .....	1240
<i>Ali Touran, Payam Bakhshi Khayani</i>	
<b>RISK.15: A Risk Visualizing Method by Object-Oriented Model for Reinforced Concrete Construction</b> .....	1253
<i>Jae-Seob Lee, Woo-Ram Kim</i>	
<b>RISK.S03: Why Is Risk So Hard To Communicate?</b> .....	1270
<i>Finn H. Sandberg</i>	
<b>Author Index</b>	