Bureau of Overseas Buildings Operations (OBO)
Cost Management Process

presented by
Tom Strandberg CCP, PMP, PSP, LEED AP BD+C

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Acknowledgements

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vi. CMAA – Construction Managers Association of America
vii. AACEI – Association for the Advancement of Cost Engineering
viii. RHA – Value Engineering Specialists
Introductions

Tom Strandberg  CCP, PMP, PSP, LEED AP BD+C
Vice President and Regional Manager – WDC Office

OBO Experience

• Cost Engineering
• Cost Estimating
• Value Engineering
• Constructability Review
• Construction Consulting
• Risk Analysis
• Schedule and Phasing Development

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O’Connor Construction Management, Inc.

- Local Washington, D.C. office with locations throughout California and Nevada

- Certified **SDVOSB and SBE**

- Full-service CM firm, founded as **O’Connor Estimating Services**
Introductions

Construction Management Association of America (CMAA)

• **The Mission of CMAA** is to promote the profession of Construction Management and the use of qualified Construction Managers on capital projects and programs.

• **The Vision of CMAA** is that all owners will realize capital project and program success by using professionally qualified Construction Managers.
Excellence in Diplomatic Facilities

Embassies and consulates have 2 essential purposes:

• To be safe, secure, functional, and inspiring places for the conduct of diplomacy
• To physically represent the U.S. government to the host nation

A facility that represents the best of American architecture, design, engineering, and construction will be an appropriate workspace, contextually appropriate, and a respected landmark.
OBO Introduction / Overview

Safety & Security
• The safety and security of staff and visitors is paramount
• Designs and construction will meet/exceed all security and safety standards
• The A/E team will be challenged to develop ever-improvement methods, materials, and solutions to thoughtfully integrate these into overall designs

Sustainability
• Buildings and grounds will incorporate sustainable design and energy efficiency
• Construction, maintenance, and operations practices will be sustainable
• Particular attention will be given to the climate, context, and site conditions
OBO Introduction / Overview

Architectural and Engineering Professional Services

• OBO hires leading American architects and engineers
• Selection is based on the quality of their design achievements and portfolio of work

Construction and Craftsmanship

• Construction professionals will be engaged throughout the process to ensure the best possible design and implementation
• OBO is committed to using the most qualified contractors with a record of delivering high quality projects
OBO Introduction / Overview

Project Delivery Methods
OBO uses two principle project methods for the design and construction of diplomatic and consular facilities.

• Design/Build
• Design/Bid/Build

The OBO is exploring the use of a third method, such as integrated project delivery.

Design Process
OBO applies a full range of design management tools. Methodologies include on-site design charrettes, on-board working sessions, user feedback forums, constructability and maintainability reviews, and peer reviews.
OBO Introduction / Overview

Program Development, Coordination and Support (PDCS)

- Advises the Director of OBO on capital-construction and non-capital programs
- Oversees three functional offices that provide design / engineering, cost and project management
- Develops criteria, guidelines, standards and policies
- Provides guidance on A/E contract selection
- Direct management oversight of:
  A. Office of Cost Management (COST)
  B. Office of Design and Engineering (DE)
  C. Office of Project Development and Coordination (PDC)
  D. Office of Special Projects Coordination (SPC)
Office of Cost Management (COST)

“The mission of the Office of Cost Management is to provide cost estimating services during all phases of OBO projects. Project costs are identified from concept to construction completion and managed by recommending alternatives to project management that improve function and value.”
OBO Introduction / Design Excellence

Past
- Remote Locations / Greenfield Development
- Standard Embassy Design
- First Costs
- Standardized Solutions
- Traditional Office Layouts
- Prescriptive Building Standards
- Security and Life Safety

Moving Forward
- Urban Locations / Brownfield Redevelopment
- Design Standards that allow flexibility
- Life Cycle Cost
- Sustainable Solutions
- High Performance Interior Design
- Results-driven Building Standards
- Security and Life Safety

Credit: ACEC
OBO Introduction / Design Excellence

**Past**
- Limited Design Leadership
- Hire Production Teams with Good Leadership
- Technical Reviews
- Design/Build
- Lowest Price Award
- Industry Outreach
- Reaction Driven

**Moving Forward**
- Expanded Design Leadership
- Hire Strong Design Teams with Good Leadership
- Industry Design Reviews
- Design/Bid/Build and Design/Build
- Best Value Award
- More Inclusive Outreach Program
- Innovation Driven

Credit: ACEC
Objectives

A. An understanding of what Cost Management means to OBO and the Industry
B. Describing the critical factors in DOS OBO & International Cost Management
C. Defining the role of Risk Analysis and Management
D. The importance of Value Engineering
E. Lessons Learned - How do we improve?
A. An understanding of what Cost Management means to OBO and the Industry

What is Total Cost Management?

Total cost management (TCM) is the effective application of professional and technical expertise to plan and control resources, costs, profitability and risk. Simply stated, TCM is a systematic approach to managing cost throughout the life cycle of any enterprise, program, facility, project, product or service.

(credit: AACEI)

- Systematic Approach
- Use of Methodologies
- Technology
A. An understanding of what Cost Management means to OBO and the Industry

Total Cost Management

i. Industry Principles
ii. Resources
iii. Costs
iv. Profitability (or efficiency and fair value)
v. Risk
vi. Bidability*
Objectives

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D. The importance of Value Engineering
E. Lessons Learned - How do we improve?
B. Critical Factors in DOS OBO & International Cost Management

i. Overview
   A. Standards / Formats / Requirements
   B. Why Cost Management Matters
   C. Integrated Coordination
   D. Project and Construction Cost Management Factors

*Project cost management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget.* (credit: PMI)
ii. Standards / Format / Requirements

- Uniformat II - Labor, material, equipment and “other” breakdown with cost aggregation and subtotaling
- Detailed parametric estimating from conceptual through construction documents
- No proprietary software requirement (I.E Success, Timberline, MCACES/PACES)
- Whole Building Design Guide (NIBS) and OBO Standard Specifications
- RFP specific requirements, Diplomatic Security and Post considerations
B. Critical Factors in DOS OBO & International Cost Management

ii. Uniformat Level Structure Example

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>A11</td>
<td>A111</td>
<td>• Wall Foundations</td>
</tr>
<tr>
<td></td>
<td>Foundations</td>
<td>Standard Foundations</td>
<td>• Column Foundations &amp; Pile Caps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A112</td>
<td>• Perimeter Drainage &amp; Insulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Special Foundations</td>
<td>• Pile Foundations</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Grade Beams</td>
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<td></td>
<td></td>
<td></td>
<td>• Caissons</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Underpinning</td>
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<td></td>
<td></td>
<td></td>
<td>• Dewatering</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Raft Foundations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Pressure Injected Footings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Other Special Foundations</td>
</tr>
</tbody>
</table>
B. Critical Factors in DOS OBO & International Cost Management

iii. Why it Matters

• **Must Balance of Cost, Time and Quality**

• Ethical and professional responsibility
  • Respect of Host Country
  • Values of the United States

• Diplomatic mission of the United States
  • Embassy
  • Consulate
iv. Integrated Coordination

- Operations
- Planning and Real Estate
- Program Development, Coordination & Support
- Construction, Facility & Security Management
B. Critical Factors in DOS OBO & International Cost Management

vi. Program and Soft Cost Factors

- Management Costs (OBO)
- Design and Professional Services Fees
- FF&E
- Off-Site Work (utilities, common services)
- Make Ready Projects (Temporary/Permanent Walls / Fences / Etc.)
B. Critical Factors in DOS OBO & International Cost Management

viii. People and Labor

- Location Factors
- Skilled vs. Unskilled
- Religion
- Clearance
- Country of Origin
- Productivity

- Burden
- Availability
- Resource Projection Planning
- Supervision
- Visas
- Incentives
B. Critical Factors in DOS OBO & International Cost Management

ix. Material and Equipment

- Availability
- Locality
- Access
- Transportation and Logistics
- Environmental Concerns

- Durability
- Buy American
- Maintainability and servicing
- Lifespan
- Lifecycle costs
B. Critical Factors in DOS OBO & International Cost Management

vii. General Cost Drivers

<table>
<thead>
<tr>
<th>PROJECT FACTOR</th>
<th>HOW/WHERE ADDRESSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of Project</td>
<td>Estimate Detail</td>
</tr>
<tr>
<td>Complexity of Project</td>
<td>Estimate Detail</td>
</tr>
<tr>
<td>Market Factors/Margin</td>
<td>Markups and Estimate Detail</td>
</tr>
<tr>
<td>Competition – Number of bids expected</td>
<td>% Range of bids</td>
</tr>
<tr>
<td>Time/Schedule</td>
<td>Mark ups</td>
</tr>
<tr>
<td>Project Risk</td>
<td>Mark ups</td>
</tr>
<tr>
<td>Escalation</td>
<td>Mark ups</td>
</tr>
</tbody>
</table>
### B. Critical Factors in DOS OBO & International Cost Management

#### v. Detail

<table>
<thead>
<tr>
<th>Primary Characteristic</th>
<th>Secondary Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ESTIMATE CLASS</strong></td>
<td><strong>DEGREE OF PROJECT DEFINITION</strong></td>
</tr>
<tr>
<td></td>
<td>Expressed as % of complete definition</td>
</tr>
<tr>
<td>Class 5</td>
<td>0% to 2%</td>
</tr>
<tr>
<td>Class 4</td>
<td>1% to 15%</td>
</tr>
<tr>
<td>Class 3</td>
<td>10% to 40%</td>
</tr>
<tr>
<td>Class 2</td>
<td>30% to 70%</td>
</tr>
<tr>
<td>Class 1</td>
<td>70% to 100%</td>
</tr>
</tbody>
</table>
“WHAT’S IMPORTANT TO YOU?”
Objectives

A. An understanding of what Cost Management means to OBO and the Industry

B. Describing the critical factors in DOS OBO & International Cost Management

C. Defining the role of Risk

D. The importance of Value Engineering

E. Lessons Learned - How do we improve?
C. Defining the role of Risk

- Risk: Opportunity and/or Threat
- Risk Workshop and Register
  - Qualitative and Quantitative Analysis
  - Resolution by Committee
- Inputs and Outputs:
  - Constructability, Bidability and Buildability
  - Cost
  - Schedule
  - Quality
- **Avoid, Reduce, Transfer, Accept**
- Risk Management
### Risk Matrix

<table>
<thead>
<tr>
<th>Probability of Occurrence</th>
<th>Highly Likely</th>
<th>Likely</th>
<th>Possible</th>
<th>Unlikely</th>
<th>Very unlikely</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 70%</td>
<td>51 - 70%</td>
<td>21 - 50%</td>
<td>5 - 20%</td>
<td>&lt; 5%</td>
<td></td>
</tr>
<tr>
<td><strong>Severity of Impact</strong></td>
<td>Catastrophic</td>
<td>Substantial</td>
<td>Moderate</td>
<td>Marginal</td>
<td>Negligible</td>
</tr>
<tr>
<td>100</td>
<td>50</td>
<td>20</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Risk Rating</strong></td>
<td>Extremely High</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Red (50-300)</td>
<td>Orange (15-49)</td>
<td>Yellow (3-14)</td>
<td>Green (0-2)</td>
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</tr>
</tbody>
</table>

### Identify the Risk

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Irrigation design by MWD on the south end of the project (Greenway south)</td>
<td>Design and construction</td>
<td>60%</td>
<td>50</td>
<td>100.0</td>
<td>$ 200,000</td>
<td>120 days</td>
<td>Avoid</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1.2</td>
<td>Right of way acquisition - total</td>
<td>Construction</td>
<td>20%</td>
<td>50</td>
<td>25.0</td>
<td>-</td>
<td>90 days</td>
<td>Avoid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Well removal and abandonment at Greenway</td>
<td>Construction</td>
<td>50%</td>
<td>20</td>
<td>20.0</td>
<td>-</td>
<td>90 days</td>
<td>Mitigate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Utility relocations</td>
<td>Some design, mostly construction</td>
<td>30%</td>
<td>50</td>
<td>50.0</td>
<td>-</td>
<td>6 month</td>
<td>Mitigate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Roadway drainage during construction</td>
<td>Construction and travelling public</td>
<td>70%</td>
<td>50</td>
<td>100.0</td>
<td>$500,000</td>
<td>120 days</td>
<td>Mitigate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Drainage outfall on south end of the project</td>
<td>Design, construction &amp; property owners</td>
<td>70%</td>
<td>50</td>
<td>100.0</td>
<td>Design Construction</td>
<td>n/a</td>
<td>Mitigate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>Schedule commitment made to SLR by ADOT</td>
<td>ADOT</td>
<td>5%</td>
<td>50</td>
<td>25.0</td>
<td>$20,000,000</td>
<td>Avoid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8</td>
<td>GMP schedule April 15, 2011</td>
<td>Entire Project</td>
<td>5%</td>
<td>100</td>
<td>50.0</td>
<td>-</td>
<td>Avoid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Objectives

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E. Lessons Learned - How do we improve?
D. The importance of Value Engineering

What is Value Engineering?

• A systematic problem solving process
• Function-based analysis
• More than just a brainstorming session
• Multi-discipline team approach
• Life-cycle cost oriented
• Value oriented (Measurement of Scope Performance / Project Costs)
D. The importance of Value Engineering

Value Engineering Job Plan
Objectives

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E. Lessons Learned - How do we improve?
E. Lessons Learned – How do we improve Cost Management?

- Engage everyone
- Expect change and plan for it
- Understand that not everything is in your control
- Research, and research some more
- Be vocal and a part of the process
Q & A