
Design-Build Estimating

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Agenda

- Initial Evaluation / Bid-NoBid Decision
- Teaming Partners
- Required Resources
- Estimate Plan / Kick-off Meeting
- Work Breakdown Structure
- Quantification
- Scheduling
- Pricing / Escalation
- Contingency
- Reviews

Initial Evaluation / Bid-NoBid Decision

Initial Evaluation / Bid-NoBid Decision

- Risk Evaluation
 - Fixed Price vs. Cost Reimbursable
 - Contract Terms & Conditions
 - R&D Exposure
 - Preliminary Project Execution Plan
- Ability to Win
 - Our value proposition
 - Competitor Analysis
 - Market Price
- Cost of Preparing the Proposal
 - Profit to BD ratios

Teaming Partners

Teaming Partners

- Planned teaming approach
 - Limited Liability Company
 - Joint Venture
 - Major Subcontractors
- Roles and Responsibilities
 - Design
 - Construction
 - Program Management Elements
- Fee Split/Sharing Arrangement

Required Resources

Required Resources

■ Design-Build

- In addition to the typical procurement, construction and other functional personnel required for DBB estimates, Design personnel are needed to:
 - Establish concept design to underpin the estimate
 - Develop estimated staffing levels and other direct cost item quantities required to execute the design
 - Incorporate Constructability concerns into the concept design
 - Coordinate with Construction for defining work packages and to negotiate release dates for design deliverables
- Recognize that the construction estimate will require conceptual estimating skills

Required Resources

■ Design Build Operate Maintain

- In addition to the types of resources required for DB projects, Operations and Maintenance personnel are needed to:
 - Develop estimated staffing levels and other direct cost item quantities required to operate and maintain the facility
 - Provide O&M parameters to the Design team
 - Coordinate with Construction for Systemization / Testing turnover plans
- Contracts having a revenue/investor element will also require financial analysts to ensure project financial viability

Estimate Plan / Kick-off Meeting

Estimate Plan - Purpose

- Drives consistency
- Communicates the estimating assumptions to the Project Team
- Ensures all of the project scope is captured and eliminates scope duplication
- Foundation for the Estimate Basis and Assumptions
- Provides the schedule (bar chart with milestones) for estimate preparation, reviews and submittal.

Estimate Plan - Contents

- Project Scope
- RFP Compliance Matrix provides:
 - Roles/Responsibilities matrix (DOR)
 - Checklist to ensure all requirements are met
- Site geographic information
- Estimating Points of Contact
- Contingency and Fee Assumptions
 - Fixed Fee
 - Incentive Fee
 - Fee Sharing arrangements
- Estimate format/submittal requirements

Estimate Kick-Off Meeting

- Thorough review of the Project, Teaming Arrangements and Estimate Plan
- Ensure all team members are aligned on the process, deliverables, DOR, etc.
- Uncover potential disconnects between Team Member practices / perceptions

Work Breakdown Structure

Work Breakdown Structure

- Must be consistent with RFP requirements
- Provides structure to the entire project team:
 - Facilitates consistent communication
 - Captures all project scope (with associated responsibilities)
 - Provides framework for the estimate and schedule
- KISS!

Quantification

Quantify the Scope

- Iterative process involving design, construction, estimating, scheduling and others to optimize the project in terms of:
 - Risk
 - Cost
 - Schedule
 - Operability / Maintainability
 - Ability to close/D&D the facility
 - Financial viability
- Outputs include:
 - Process Flow Diagrams
 - Master Equipment Lists
 - Conceptual project layout
 - Permitting requirements
 - Etc.

Quantify the Scope

- Engineering staffing levels estimated based on:
 - Number of drawings
 - Number of specifications
 - Other deliverable requirements
- Construction quantities based on:
 - Conceptual Plant Layout
 - Historical models
- Operations & Maintenance staffing based on:
 - Throughput analysis
 - PFDs
 - Historical data

Quantify the Scope

- Most important element of DB estimating:

**Fully Document the Scope
Basis, Assumptions,
Inclusions and Exclusions!**

Scheduling

Scheduling

- Structure by WBS
- Durations and linkages based on:
 - Design staffing levels
 - CDRL requirements
 - Long Lead times on Equipment procurements
 - Permitting assumptions
 - Construction quantities
 - Throughput analysis
- Provides the basis for quantifying the level of effort type staffing:
 - Project Management
 - Safety
 - Quality, etc.

Pricing / Escalation

Pricing / Escalation

- Pricing
 - Similar to DBB approach
- Escalation
 - Based on the schedule
 - Use established rates or research as needed

Contingency

Contingency

- Critical in Fixed Price estimates
- Assess potential variation in estimating uncertainties including:
 - Quantification
 - Productivity
 - Pricing
- Monte Carlo simulation is a good tool
- Ensure clear understanding between profit, contingency and risk
- Don't shortcut this effort – can represent a large proportion of the total estimate

Reviews

Reviews

- Start planning and developing review packages early in the process
- Include:
 - Scope description
 - Basis and Assumptions
 - Comparative data
 - Total costs
 - EPC ratios
 - Installation rates
- Sell the package!

Summary / Q& A

Summary

- Ensure the required resources are on board
- Take the time to write the Estimate Plan
- Don't forget the WBS
- Document the Scope Basis, Assumptions, Inclusions and Exclusions
- Apply proper level of attention to scheduling
- Capture Contingency and Risk items throughout the estimate effort
- Prepare for reviews early in the process