
Water Design-Build Council  
March 31, 2011  
Kansas City, MO
Presentation overview

- Water Design-Build Council Introduction
- Market Trends
- Key Considerations in Choosing Alternative Delivery
- Overview of Project Delivery Methods
- Conducting the Procurement Process
- Managing Risk and Liability
- Managing the Contract and Transitioning to Owner Operations
- Case Studies
Water Design-Build Council
Introduction
WDBBC mission

Our mission is to promote design-build and CMAR best practices to facilitate productive and collaborative relationships between owners and contractors.
WDBC member companies
Education is our keystone

- The Municipal Water and Wastewater Design-Build Handbook
- Textbook on design-build (in conjunction with AWWA and DBIA)
- Comparative Evaluation of Design-Build Versus Design-Bid-Build (1-year study by university consortium: 2009)
Education is our keystone

- Market Size Study (5-year analysis of the WDBC’s member-firm projects)
- Owner Satisfaction Survey (2008)
- Fact sheets, website and industry articles
Market Trends
Alternative project delivery map

waterdesignbuild.org/projects.htm
46 states use design-build or CMAR

2005-2008 Combined Totals

Top 5 States Total Number of Contracts
- California: 22%
- Florida: 15%
- Arizona: 15%
- Texas: 10%
- Nevada: 5%

All others: 37%

Top 5 States Total Value of Contracts
- Florida: 26%
- Arizona: 26%
- California: 26%
- Texas: 10%
- Nevada: 5%

All others: 31%
Design-build is most-used method

Percent of New Starts 2005 - 2008

DB:82%
CMAR 15%
DBO: 3%
. . . But CMAR is gaining ground

Percent of New Starts

<table>
<thead>
<tr>
<th>Year</th>
<th>CMAR</th>
<th>Design-Build-Operate</th>
<th>Design-Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>9%</td>
<td>88%</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>12%</td>
<td>86%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>8%</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>30%</td>
<td>64%</td>
<td></td>
</tr>
</tbody>
</table>
Water and wastewater projects share equal billing

Prevalence of Facility Type 2005 - 2008

- Water: 47%
- Wastewater: 42%
- Conveyance: 7%
- Other: 4%
All contract sizes represented

Distribution of New Starts 2005 - 2008

- < $500k: 26%
- $500k - $1 M: 9%
- $1 M - $5 M: 22%
- $5 M - $10 M: 15%
- $10 M - $50 M: 18%
- > $50 M: 10%
Alternate delivery forecasted to gain market share

---

**Market share by delivery model forecast: 2011**

- DB: 19.9%
- CM@R: 5.8%
- DBO: 5.2%
- DBFO: 64.8%

**Market share by delivery model forecast: 2016**

- DB: 22.0%
- CM@R: 5.5%
- DBO: 8.4%
- DBFO: 51.1%

Source: GWI

DB: Design-build
DBB: Design-bid-build
CM@R: Construction Manager at Risk
DBFO: Design-build-finance-operate
Key Considerations in Choosing Alternate Delivery
Initial decisions greatly influence entire project
Considerations

• Are state laws amenable to DB or CMAR for this project?
• What are the project goals and objectives driving the decision?
• Which delivery mechanism best suits goals and objectives?
• What permits or regulatory approvals will be required?
• Is there adequate funding?
Reasons for choosing design-build

- Single Point Accountability
- Having the Builder Involved in the Design Process
- Speed of Delivery
- Price Certainty
- Construction Quality
- Fewer Change Orders and Claims
- Lower Costs
Overview of Project Delivery Methods
Project delivery methods

Traditional Delivery

Design-Bid-Build

Alternative Delivery

Construction Management at-Risk

Fixed-Price Design-Build

Progressive Design-Build

OWNER

DESIGNER

BUILDER

OWNER

DESIGNER

CM

OWNER

DESIGN-BUILDER

OWNER

DESIGN-BUILDER
## Pros and cons of CMAR

### Advantages to Owner
- Direct owner control
- Simple, inexpensive, quick procurement process
- Flexibility to complete work based on funding
- Owner can reject lump sum or GMP without significant project delays
- Potential for increased participation
- Better chance of designing to budget

### Disadvantages to Owner
- Loss of single-point accountability
- Owner responsibility for design errors and omissions
- Cost for construction unknown at time of signing
- Owner responsibility for process guarantees
- More owner involvement
Pros and cons of fixed-price design-build

**Advantages to Owner**
- If performance based, limited owner responsibility for design
- High public acceptance (lump sum)
- Known at contract signing
  - Performance criteria and requirements
  - Cost of design and construction
  - Fixed schedule

**Disadvantages to Owner**
- High procurement costs
- Longer procurement process
- Owner may need to pay stipend to unsuccessful proposers
- Inefficient use of municipal funds
- Potential for reduced participation (proposal costs)
- Difficult to price/inflation
Pros and cons of progressive (phased) design-build

<table>
<thead>
<tr>
<th>Advantages to Owner</th>
<th>Disadvantages to Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Simple, inexpensive, quick procurement process</td>
<td>• Construction cost is not known at the time of initial contract signing</td>
</tr>
<tr>
<td>• Potential for increased participation</td>
<td>• Cost determined through negotiated and competitive processes</td>
</tr>
<tr>
<td>• Flexibility to complete work based on funding</td>
<td>• May need public education campaign</td>
</tr>
<tr>
<td>• Owner can reject lump sum or GMP without significant project delays</td>
<td></td>
</tr>
<tr>
<td>• Better chance of designing to budget</td>
<td></td>
</tr>
</tbody>
</table>
Pros and cons of performance-based and prescriptive requirements

### Advantages to Owner
- Maximum potential for cost savings through innovation
- Maximum transfer of design-related performance risk
- Low RFP preparation costs
- Substantial control over design and O&M costs
- Proposal can emphasize project design-build cost
- Potential for increased participation

### Disadvantages to Owner
- Potential for higher O&M costs or undesirable project features
- Complex proposal evaluation and selection
- Potential for decreased participation
- Longer procurement duration
- Costlier RFP preparation
- Design risk not clearly assumed by design-builder
Conducting the Procurement Process
RFQ basics

• Scope of Work

• Submittal requirements

• Factors the owner will use in evaluating responses
Potential RFQ evaluation factors

- Client references
- Project approach and understanding
- Quality assurance
- Safety record
- Specialized knowledge
- Sustainable design/LEED
- Commitment of key personnel
- Prior experience with similar projects
- Financial stability
- Bonding capacity
- Location

“If you are thinking of doing a design-build, we would recommend talking to other communities similar to yours that have done it to learn what works and what does not work.”

Erin Anderson
Attorney, Cle Elum Wastewater Facility
RFP basics

• Creates clear basis for evaluating proposals
• Defines project scope, quality, and performance requirements
• Attracts competitive proposals
• Minimizes questions after RFP is published
• Minimizes issues pre-contract award
What is generally included in an RFP?

- Background and objectives
- Description of project
- Instructions to proposers
- Required content of proposals
- Weighted evaluation criteria
- Ways to incorporate potential alternatives by bidders
- Draft contract
- Special requirements for sole-source, pre-selected, or pre-qualified equipment manufacturers or suppliers
Managing Risk and Liability
Allocate risk to party best able to manage it

<table>
<thead>
<tr>
<th>Risk</th>
<th>Design-Build Primary Responsibility</th>
<th>CMAR Primary Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design-Builder</td>
<td>CMAR Firm</td>
</tr>
<tr>
<td></td>
<td>Owner</td>
<td>Owner</td>
</tr>
<tr>
<td>Land and easement acquisition</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Design</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Building and administrative permits</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Environmental approvals and permits</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Quality and quantity of influent</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Site conditions</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Schedule</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Cost</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Project performance/acceptance</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Uncontrollable circumstances</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>Materials cost escalation</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
<tr>
<td>LEED certification</td>
<td>![Design-Build]</td>
<td>![CMAR Firm]</td>
</tr>
<tr>
<td></td>
<td>![Owner]</td>
<td>![Owner]</td>
</tr>
</tbody>
</table>
Typical owner guarantee requirements

- Sureties and bonding
- Quality management
- Insurance
- Letters of credit (with project finance)
Addressing liability in the contract

- Limits of liability
- Liquidated damages
- Consequential damages
- Indemnification
- Warrantees
Managing the Contract and Transitioning to Owner Operations
Planning, collaboration and teamwork: Key factors in contract management

- Implementation team
- Collaborative mindset
- Project management plan
- Financial management policies and procedures
- Dispute resolution
- Detailed project schedule
- QA/QC
- Communications plan
- The unexpected
- Risk register
- Defined and agreed-upon performance criteria
Case Studies

Winter Haven, Florida
Longmont, Colorado
Tampa, Florida
CMAR Case Study

Winter Haven, Florida

Haskell
Winter Haven, Florida

- City’s sale of spray field necessitated improvements to existing treatment facilities.
  - 7.5 MGD wastewater treatment disposal
  - $16 million
  - Population 34,000
Winter Haven’s challenges

• Accelerated schedule
• Strict budget constraints
• City inexperienced with DB
• Strict effluent requirements
Winter Haven’s solutions and results

• Solutions
  – CMAR chosen to accelerate project schedule
  – CM firm provided milestone estimates and value engineering.
  – CM firm worked closely with owner in educating about alternative delivery

• Results
  – $1.9M in value engineering alternatives
  – Overall project schedule shortened by 6 months (compared to traditional delivery)
  – Approximately $300,000 in sales tax savings
At the dedication ceremony, Haskell presents $300,000 check to Winter Haven representing job cost savings. “It doesn’t happen”, Birdsong said in response to the refund. “People don’t refund money.”

Nathaniel Birdsong
Mayor, City of Winter Haven
Progressive Design-Build Case Study

Longmont, Colorado
Black & Veatch in joint venture with Western Summit
Longmont, Colorado

- Replace two water treatment plants with one
  - Aging infrastructure
  - Growing population and economy
  - Population 80,000
  - 30 MGD water treatment plant
  - Two-phased approach
  - Budget: $43 million    Actual: $42 million
  - Open-book GMP
Longmont’s challenges

- More stringent regulatory standards for drinking water
- Increased demands of a growing economy and population
- City’s largest single infrastructure project (at the time)
Longmont’s solutions

• Fast-track schedule
  – Developed GMP within 5 months of notice to proceed
  – Final design and construction for a planned start-up of the plant within 35 months
  – Facilities combined into a single treatment complex building to allow centralized operation of the treatment plant
Longmont’s results

• Final completion two months ahead of schedule
• Project cost $2.8 million under GMP
• Plant consistently meets or exceeds all drinking water standards
• Owner savings on operating costs
• 200 jobs created during construction
“The team operated as one, and everyone understood and acted in accordance with the common goals. As a direct result of our close collaboration, we were able to take advantage of emerging opportunities and modify project components to achieve cost savings and maximize value.”

Larry Wyeno,
Longmont Construction Manager
Program Management & Design-Build Case Study
Tampa, Florida
CH2M Hill
Tampa, Florida

- Single-entity program management and design-build program
- Contract began in 2008
- Expected completion in 2013
- 11 water and storm water projects under way
- 4 water wastewater projects
- $250 M total value
- Population 657,000
Tampa’s challenges

- Urban pipeline construction through residential and commercial
- Complicated multi-project program
Tampa’s solutions and results

• Solutions
  – Study of each portion of pipeline route
  – Measures to minimize disruption to residents
  – Collaboration with City of Tampa staff

• Results
  – Estimated cost savings of $1 million
  – Early completion of water pipeline replacement
"We're especially pleased that this water pipeline replacement project was completed four weeks ahead of schedule. An important component of the project was installation of fire hydrants so critical to protecting the residents and their property in this neighborhood."

Steve Daignault,
Administrator of Public Works & Utilities Services for the City of Tampa
Q&A