CMOR Value Through CMAR Collaboration
Trinity Well Field Project

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Agenda

- Project Description
- CMAR Process
- CMAR Selection
- Design Phase Collaboration
- Bid/Construction Phase Collaboration
- Lessons Learned
- Q&A
Project Description

• Trinity Well Field Project
  – Supply diversification for New Braunfels Utilities (Texas)
  – Additional water sources needed due to growing system demand – high growth in Central TX
  – Test well & property acquisition
  – Preliminary Design initiation (Spring 2013)
Project Description

• Goal to finish one year early (Summer 2015 vs. 2016)
• Design dependent on well field data
• Project delivery options
  – Design-Build
    • Population precluded this option
  – Accelerated Design-Bid-Build
  – Construction Manager at Risk (CMAR)
CMAR Process
What and Why?

• Projects Best Suited for CMAR
  – Expansion or remodel of existing facility/complex projects
  – Has high risk profile and tight schedules/budgets

• CMAR Hurdles:
  – Increased Owner involvement with procurement
  – Education of stakeholders

• Benefits of CMAR:
  – CM input during design
  – Ability to reduce the unknowns; Open book process
  – Appropriate risk allocation
  – Reduced Potential for Claims
  – Increased Potential for Innovation
CMAR Selection
What and Why?

- Two-Step
  - RFQ/SOQ
  - RFP, pricing and interview
- Owner’s Role
- Engineer’s Role
- Scoring criteria
- **MGC Contactors awarded CMAR contract**

### RFQ Scoring Criteria

<table>
<thead>
<tr>
<th>Description</th>
<th>Point Value</th>
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<tbody>
<tr>
<td>Experience/past performance; ability to perform the work</td>
<td>20</td>
</tr>
<tr>
<td>Experience and qualifications of proposed key personnel</td>
<td>20</td>
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<tr>
<td>Experience as a Construction Manager at Risk</td>
<td>15</td>
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<tr>
<td>Ability to complete projects on time</td>
<td>20</td>
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<tr>
<td>Ability to complete projects within budget</td>
<td>15</td>
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<tr>
<td>Other factors</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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Design Phase Collaboration

• Communication
  – Establish communications procedures
  – Determine key points of contact

• Meetings
  – Design kickoff meeting and basis of design workshops
  – Bi-weekly review meetings with all stakeholders
Design Phase Collaboration

• Owner’s Role
  – Active involvement in design process
  – Make critical design and cost impact decisions
  – Negotiate scope and price with CMAR for GMP
  – Manage Engineer and CMAR contracts

• Engineer’s Role
  – Design with input from Owner and CMAR
  – Assist Owner with monitoring overall project budget and schedule
Design Phase Collaboration

- CMAR’s Role
  - Provide input during design process
    - Cost modeling
    - Budget and scope monitoring
    - Schedule development and monitoring
  - Assist Engineer with designing within the budget
    - Design based on NBU’s preferences/goals
    - Review design submittals
      - Ensured scope consistent with estimate
      - Recommended budget efficiencies
      - Performed Constructability Reviews
Design Phase Collaboration

- Successful Design Phase Collaboration Example
Design Phase Collaboration

- **Project Components**
  - 4 wells drilled/tested/capped (by others)
  - 1.5 MG Pre-stressed GST
  - Booster pump station and associated yard piping
  - 4 well pumps and associated yard piping
  - Collection & distribution piping
  - 4 offsite flow control valves for distribution into system
  - Electrical and Instrumentation
  - Chlorine disinfection & fluoride treatment
Bid Phase Collaboration

- Final Design Results – Phased Bid Package Procurement
  - Bid Package 1A - Pre-purchase of Booster Pumps
  - Bid Package 1B - Pre-purchase of Well Pumps
  - Bid Package 2 - Construction of 1.5 MG Prestressed Concrete Ground Storage Tank
  - Bid Package 3 - Construction of Pump Station and Site Development
  - Bid Package 4 - Flow Control Improvements
    (Four Locations Off-Site)
Construction Phase Collaboration

- Communication
  - Adjust to new team members added in the construction phase
  - Key points of contact established for construction phase

- Meetings
  - Preconstruction Conference
  - Pre-Activity Meetings
  - Weekly Progress Meetings with all stakeholders
Construction Phase Collaboration

• Owner’s Role
  – Provide input during submittal review and construction
  – Monitor construction (Inspector)
  – Contingency budget allocation

• Engineer’s Role
  – Monitor construction (part-time Resident Project Rep)
  – Submittal review
  – Progress meetings
  – Site visits
  – Monitor contract
  – Address technical needs
Construction Phase Collaboration

• CMAR’s Role
  – Contract with selected contractor or supplier
  – Monitor and manage construction contract by providing inspectors and administering contract
  – Quality Assurance
  – Schedule Compliance
  – Scope coordination between packages
Construction Phase Collaboration

• Construction Phase Results
  – Substantial Completion on 3 of 4 pumps in June 2015
  – 4th pump substantially complete in August 2015
  – Project completed with net credit of $383,245 dollars below total GMP amount.

• Successful Construction Phase Collaboration Example
Lessons Learned

• Collaboration Successes
  – During design – develop the TEAM - Same goal
  – Meeting participation
  – Expedited design schedule
  – Constructability and value engineering workshops
  – Thorough plan/spec review
  – Digital bid submission website
  – Startup procedures plan
Lessons Learned

• Design Phase
  – Split up into smaller functional groups for “design workshops”
  – Establish a permitting and regulatory agency review plan early
  – Keep design phase meetings going until all construction packages are underway

• Procurement Phase
  – Coach team members on process early
  – Ensure you have buy in from key personnel
Lessons Learned

• Construction Phase
  – Organized method to maintain Owner’s operations and maintenance staff involvement
  – Progress meeting schedule supports the tasks/goals
  – Remain flexible
  – Early coordination with outside utilities
  – Hold pre-submittal and post-submittal meetings when complex or expedited reviews are needed
Special Thanks

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  – Rogger Biggers
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  – Jason Theurer
  – Trino Pedraza
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Questions

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