Collaborative Design-Build Approach Delivers South Gwinnet Wastewater Improvements
Scott H. Adams, PE
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Project Background
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• Approx. 5 MGD WW from Gwinnett County to Dekalb County for treatment
• Gwinnett paid Dekalb for WW treatment (monthly)
• Gwinnett would also pay 25% of Dekalb TP upgrade costs, which = $47.7M
• Due by December 2015
Gwinnett County Wastewater Service Areas
Six alternatives to redirect WW flows from Dekalb County Pole Bridge WRF to Gwinnett Facility

Alternative #4 was accepted at $25M (Est.)

Four Pump Stations (1 Major Rehabilitation)

55,000 ft. new Force Mains
Design-Build
Owner’s Perspective

1. What is the purpose in performing DB?
2. What potential benefits are most attractive?
3. What are the major challenges for the County?
4. Who is the County champion of DB?
   - Owners Advisor

Some Projects are better candidates than others.
Design Bid-Build vs. Design-Build
Design Bid-Build (DBB)

1. Owner engages engineer for design and construction management services
2. Design completed
3. Owner solicits construction bids
4. Owner engages contractor for construction
5. Owner has 2 contracts
DBB Advantages

• Established and understood process
• No legal barriers
• Engineer works with Owner
• Well established legal precedents
• Insurance and bonding well defined
• Suitable for competitive bidding to obtain lowest initial price
DBB Drawbacks

• No input from the contractor during design
  • Constructability considerations can impact cost and schedule
• Very time consuming, multiple procurements
• Possible adversarial relationship among owner, engineer, and contractor
  • Possible unsatisfactory results-cost, schedule, and quality
  • Possible change orders and disputes
Design-Build (DB)

- Single contract for Design and Construction
- Owner solicits proposals
- Owner has 1 contract
DB Advantages

- Faster delivery
- Single point of accountability
- Avoids low-bid contractors
- Early Price certainty
- Fewer change orders, claims, and disputes
- Innovation or value enhancements
Top reasons Owners choose DB

- Single Point Accountability
- Having the Builder Involved in the Design Process
- Speed of Delivery
- Price Certainty
- Construction Quality
- Fewer Change Order Claims
- Lower Costs

NOT A REASON | SECONDARY REASON | PRIMARY REASON
Steady growth of alternative delivery demonstrates acceptance

ENR reports (2007):

“In the continuing search for the most efficient way to deliver a project, DB continues to be the process of choice for many owners.”
South Gwinnett Wastewater Collection Design-Build
Why Gwinnett chose Design-Build

- Potential time savings
- Potential cost savings
- Innovative design and construction solutions-Value Enhancements
- Single contract
- Lower number of formal change orders

This is a schedule & cost driven project, great candidate for DB project delivery.
Procurement Process

1. Budget establishment
2. Proposal development
3. RFP advertisement
4. Receive proposals
5. Evaluate proposals
6. Choose highest scoring firm
## Proposal Evaluation Criteria

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<td>Optional Interview</td>
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<td><strong>TOTAL</strong></td>
<td><strong>130</strong></td>
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**Brown and Caldwell 18**
Project Team

Gwinnett County  Owner

CH2M  Owner’s Advisor, Conceptual Engineering, Resident Engineer

John D Stephens, Inc.  Design-Build Contractor (Prime)
  • Crowder Construction  Pump Station Sub Contractor
  • Brown and Caldwell  Engineer
**Key Technical Issues**

**Hydraulics** wetwell configuration, high head pump application, pump selection and challenging force main profile

**Pump Stations** reliability, protect Norris Lake, site safety, security, odor, noise, site constraints, floodplain, work space

**Force Mains** minimizing impact to residents along route, minimize environmental impacts along the route, pipeline corrosion and protection, odor control
How DB Benefits were Achieved

**Collaboration**
- Workshops, monthly meetings

**Schedule**
- Simultaneous permitting, design and construction

**Risk Allocation**
- Owner-easements
- Engineer-permitting
- Contractor-construction, bypass pumping
Benefits of Design Build - Collaborative Approach Realized

• Early pumping
• Facilitated early project completion
• Value enhancements $400,000
• Alternative pump selection
• Control valve and force main hydraulics
  • Reduced odor
  • 1,200 ft. of force main size reduced
• Demolish pump building instead of rehabilitation
• Utilized abandoned pipeline trench
• Enhanced odor control
Bermuda Road PS
Mineral Ridge PS
Norris Lake PS
Norris Lake
PS
Good News!!

• Completed in September 2014 (5 months ahead of schedule)
• $17.7M vs. $25 M budget

• Ahead of Schedule & Under Planned Cost

• 3 new pump stations built & 1 existing pump station upgraded, including associated 55,000 ft. ductile iron force mains
Lessons Learned

• Value enhancement should also consider life cycle costs
• Operations staff should be involved in Proposal evaluation process
• There must be a DB champion from the Owner’s side (Owner’s Advisor)
• Easement procurement could adversely affect the project schedule
Thank you.
Questions?

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