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Delivery Methods for Utility Projects

From the Carolinas

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Project Delivery is a comprehensive process including planning, design and construction required to execute and complete a construction project. Choosing a project delivery method is one of the fundamental decisions owners make while developing their acquisition strategy. Choosing the best method for any project must start with a good understanding of choices available. Owners must also understand the impact of each choice. The delivery method establishes when parties become engaged, influences the choices of contractual relationships and influences ownership and impact of changes and modification of project costs. Understanding the best suited projects and pros and cons of each project delivery method is key to choosing a delivery method that best meets the unique needs of each owner and their project.

Design-Bid-Build

Design-Bid -Build (DBB) is the traditional and most familiar contracting method for construction projects. The owner contracts with an engineer/designer to design the project. Once the design is complete the owner and engineer, in most cases acting as the owner's agent, put the project out for competitive bid. In public projects, the contractor with the lowest bid, if responsive, is awarded the contract.

BEST SUITED PROJECTS

- Well designed projects
- Budget Constraints
- Few unknown risks

WHY OWNERS CHOOSE DBB

- Familiar Process
- Owner monitors the work
- Owner has scope control
- Owner chooses engineer/designer
- Involvement of owner's agent throughout the process

PROS

- Project is competitively bid
- Regulations are well understood
- Choice of designer/engineer
- Engineer is independent advocate for owner

CONS

- Low-Bid contractor selection
- Multiple contracts for owner to manage
- Less control over equipment selections
- Increases risk of change orders, claims and disputes
- No collaboration between designer and builder during design process
- Process can be lengthy from beginning of design to end of construction
- If project is over budget, redesign and rebidding process adds time to the schedule

Lump Sum Design-Build

Lump Sum Design-Build (LSDB) is a project delivery method where full design and construction are contracted with a single entity, the Design-Builder. The DB team, including a design engineer and the contractor, can be selected based on a combination of qualifications and price. The owner and their selected engineer, owner's agent, define project concepts and performance criteria and produce documents based on a 10%-30% design. The owner puts this package out for bid, and the Design-Builder then prepares a proposal based on this information which includes a lump sum price for the project. The DB team is responsible for design, construction, and performance of the project.

BEST SUITED PROJECTS

- Critical Timelines
- Budget Constraints
- Complex Technical Issues
- Coordination Concerns
- Low risk of Unknowns

WHY OWNERS CHOOSE DB

- Maintain Plant Operations
- Preferred Equipment Selection
- Regulatory Timelines
- Early Cost Certainty
- Single Point of Responsibility
- Qualifications-Based Selection

PROS

- Can be short procurement process
- Best value selection
- Fewer claims and legal issues
- Collaborative environment - Common Goals and Objectives
- Design-Builder can self-perform work
- GMP delivered prior to design completion - Early Cost Certainty

CONS

- Owner must provide project parameters - Costs, Schedule, Quality, etc/ costs,
- Increased cost due to contingencies for unknowns
- Owner has less control of final design
- Financial commitment of engineer and contractor for proposal – may be cost prohibitive
- No separate oversight of construction unless owner hires an owner advisor

Progressive Design Build

Progressive Design-Build (PDB) is a project delivery method where design and construction are contracted with a single entity, the Design-Builder, typically with a two-step contract, a preconstruction contract followed by a construction contract. The construction contract can also be done in phases as design is complete.

The owner chooses the Design-Builder based on qualifications. The PDB team is responsible for design, construction, and performance of the project. The owner and or the owner's agent is involved in each step of the design and is provided pricing during the design phase which allows owners to meet established budgets.

When scheduling and constructability issues are addressed during design, modifications can be incorporated which save money, enhance schedule, and improve quality through better design choices. Adversarial relationships can be eliminated as the designer and builder are a team with aligned goals and objectives to deliver a successful project for the owner.

BEST SUITED PROJECTS

- Critical Timelines
- Budget Constraints
- Complex Technical Issues
- Coordination Concerns
- Higher risk of Unknowns

WHY OWNERS CHOOSE PDB

- Maintain Plant Operations
- Owner has flexibility in stopping project due to budget or other uncontrollable factors
- Preferred Equipment Selection
- Single Point of Responsibility
- Qualifications-Based Selection
- Open-book costs allow for complete transparency
- Owner is engaged in the process

PROS

- Simple and inexpensive procurement process can be completed in a short timeframe
- Project can be implemented in phases which can shorten total schedule
- Maximizes owner flexibility, involvement, and control of the project
- Selection of contractor and designer based on qualifications
- Fewer claims and legal issues
- Allows for value engineering
- Collaborative environment - Common Goals, Trust, Commitment

CONS

- Owner must provide project parameters - Costs, Schedule, Quality, etc
- Awarded without cost component
- Concerns about a new way of procuring projects
- No separate oversight of construction unless owner hires an owner advisor

Construction Manager At-Risk

Construction Manager at Risk (CMAR) is a project delivery method that establishes a working relationship between the owner, designer, and construction manager. The construction manager is added to the team after the designer has been selected. The construction manager and the designer have separate contracts with the owner as they work together from preconstruction through construction. The contractor is able to provide constructability reviews, cost estimating, and scheduling support throughout the process leading to more accurate budgets and timetables, as well as increased knowledge of the project before construction begins. When managed effectively, this approach ensures a smoother process characterized by fewer RFIs and change orders than the traditional bid process.

Once the owner and the CMAR agree to a GMP, the relationships and the process become much like traditional design-bid-build. While this method may have some replication of costs between the contractors and the construction manager, it does provide a GMP which is attractive to many owners. The owner has contractor input during the design and bidding phase and has the protection of knowing they have a price that is guaranteed.

BEST SUITED PROJECTS

- New, renovation, or complex projects that are sequence of schedule sensitive
- Need for Constructability Reviews
- Coordination Concerns
- Cost Constraints
- Architectural/Building Projects

WHY OWNERS CHOOSE CMAR

- Qualifications-Based Selection
- Desire for a Guaranteed Maximum Price
- Early Involvement of Contractor
- Maintain Traditional Relationship with Designer
- Achieve Specific Goals Sustainability - Local, Small, MWBE

PROS

- Qualifications-Based Selection
- Team concept
- Early involvement of CM for constructability reviews
- Incremental estimates during design
- Procurement is similar to traditional design- bid- build process

CONS

- Design changes are costly after construction begins
- Reduced owner control of subcontractor and vendor preferences
- Owner retains responsibility for design
- Separate contracts to manage design and construction
- GMP @ 100% Design—based on bid packages
- CMAR may not be able to self-perform work based on state laws

Public Private Partnerships

A Public Private Partnership (PPP or P3) is an arrangement between a public body or agency (federal, state, or local) and a private sector entity to deliver a service and/or facility for use by the public. A contract between the public entity and the private sector entity outlines the provision of assets and the delivery of services. While the private entity would typically be responsible for financing the capital costs, design, construction, and operation and maintenance of the project; the public entity maintains ownership and control of the asset. The private entity would recover its investment over an operation and maintenance period (20 to 30 years) through revenues generated. The return on investment (ROI) varies depending on the type of P3 project.

Besides the method for financing a P3 project, perhaps the key distinction between P3 procurement and other delivery methods is the allocation of risk. One common element in P3 contracts is the near complete shifting of design and build responsibilities to the private entity. Upon project completion, the private entity must ensure operation and maintenance functions ensure certain standards are met. The private entity is also at financial risk if generation of revenues fall short of their anticipated ROI.

There are major advantages to the P3 process. Because the private entity is typically responsible for the performance throughout the infrastructure's lifecycle, there is greater incentive to deliver better quality projects and employ more innovation in design and construction. The private entity is motivated to evaluate long-term maintenance costs rather than just "lowest bid". Consideration of quality, performance, and ease of operations improves efficiencies for the project beyond the construction phase.

BEST SUITED PRJECTS

- Transportation projects that can provide an ROI through tolls.
- Large public projects where private funding would allow projects to move forward
- Projects requiring creative financing
- Projects with critical budget and schedule needs

WHY OWNERS CHOOSE P3

- Transfer risk to capitalize on the risk management capabilities of the private sector
- Boost the efficiency of a project through its entire life
- Enable projects to move forward where resources are insufficient
- Reduce life cycle costs
- Achieve accurate estimates and greater cost certainty

PROS

- Cost Certainty
- Schedule Certainty
- Innovation for quality and performance
- Economic Benefit
- Reduces construction costs and overall lifecycle costs
- Provides better infrastructure solutions

CONS

- Projects are often complex with stakeholders involved in the decision- making process
- Typically attached to a long-term operations contract
- Difficult to receive Federal and State Funding
- Private financing costs could be higher than public financing
- A P3 Contract costs more to develop