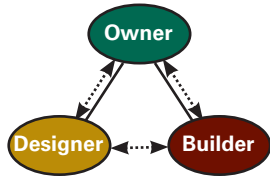


PROJECT DELIVERY OPTIONS SUMMARY

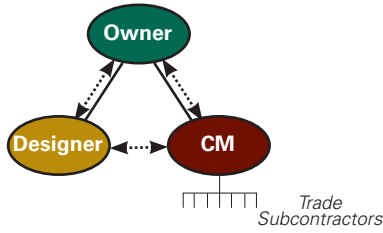
Legend

- Communication
- Contract

Design-Bid-Build DBB



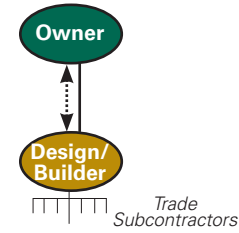
Construction Management at Risk CM@Risk



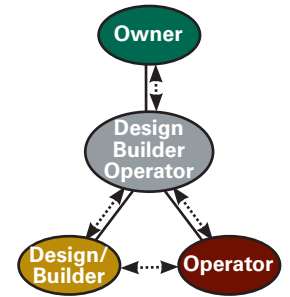
Design Build Lump Sum DB-LS



Progressive Design Build (GMP)



Design Build Operate DBO-LS



INDUSTRY PERSPECTIVE

SCHEDULE

May vary based on design/builder procurement

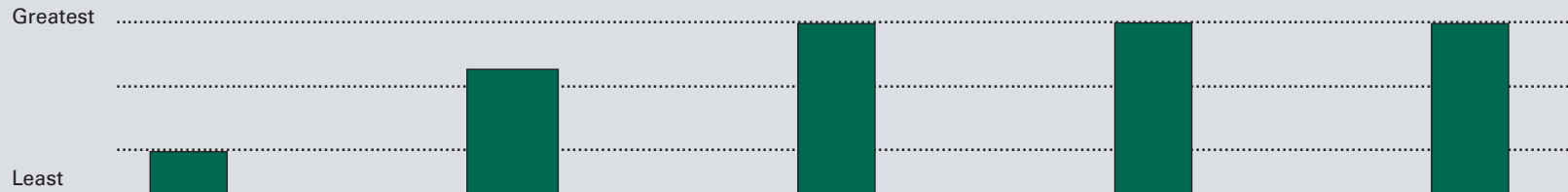


QUALITY CONTROL

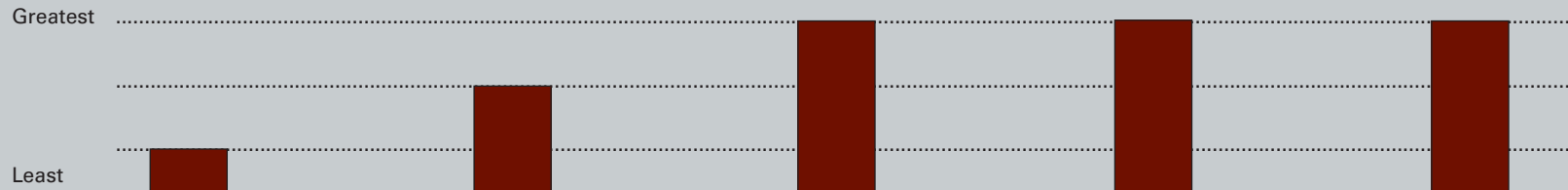
Including design intent; claims; change orders



OWNER RISK TRANSFER/ DISPUTE RESOLUTION



OWNER COST CONTROL



OWNER PARTICIPATION/ FLEXIBILITY FOR CHANGES

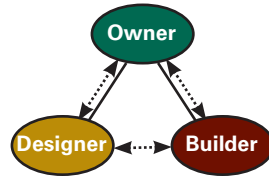


PROJECT DELIVERY OPTIONS SUMMARY

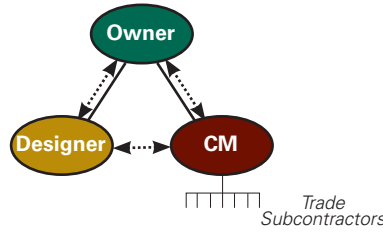
Legend

- Communication
- Contract

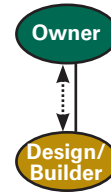
Design-Bid-Build DBB



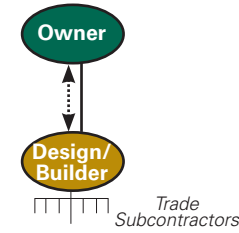
Construction Management at Risk CM@Risk



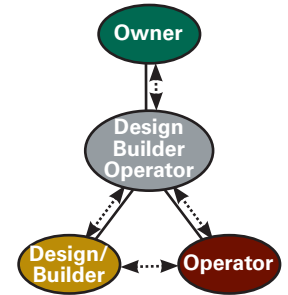
Design Build Lump Sum DB-LS



Progressive Design Build (GMP)



Design Build Operate DBO-LS



Contracting Entities & Selection Criteria	<ul style="list-style-type: none"> Owner – Designer (Value Based) Owner – Builder (Cost Based) 	<ul style="list-style-type: none"> Owner – Designer (Value Based) Owner – CM at Risk (Value or Cost Based) 	<ul style="list-style-type: none"> Owner – Design/Builder (Value or Cost Based) 	<ul style="list-style-type: none"> Owner – Design/Builder (Value or Cost Based) 	<ul style="list-style-type: none"> Owner – Design/Builder (Cost Based)
Fee (% of Project Cost)	<ul style="list-style-type: none"> Designer: 10-15% Builder: 6-10% 	<ul style="list-style-type: none"> Designer + CM: 8 – 15% 	<ul style="list-style-type: none"> Design Builder: 8 – 15% Third Party Inspection: 3 – 5% 	<ul style="list-style-type: none"> Design Builder: 8 – 15% Third Party Inspection: 3 – 5% 	<ul style="list-style-type: none"> Design Builder: 6 – 10% Third Party Inspection: 3 – 5%
Advantages	<ul style="list-style-type: none"> Well understood Independent oversight of builder Open to Owner involvement during design 	<ul style="list-style-type: none"> Owner may select CM on qualifications Early integration of CM Provides early and continuous constructability review Provides earlier certainty of costs Pricing and design may be conducted in parallel Open to Owner involvement during design CM @ Risk firm may “prepurchase” equipment 	<ul style="list-style-type: none"> Single point of responsibility Provides early, fixed price Performance Warranty from design/builder May promote design innovation Owner can transfer risk to design/builder Collaboration between designer and builder Reduces design costs Builder “prepurchases” equipment 	<ul style="list-style-type: none"> Single point of responsibility Promotes design innovation with Owner Performance Warranty from design/builder Owner can transfer risk to design/builder Collaboration between designer and builder Allows smaller subcontractors to participate Owner may specify equipment Owner has privilege to all cost data Open to Owner involvement during design Negotiated price during design Builder “prepurchases” equipment 	<ul style="list-style-type: none"> Single point of responsibility Provides early, fixed price for design, construction and operations Performance Warranty from design/builder May promote design innovation Collaboration between designer and builder Reduces design costs Owner benefits from long-term risk transfer Builder “prepurchases” equipment
Disadvantages	<ul style="list-style-type: none"> Multiple points of responsibilities Owner warranties design documents Owner bears majority of risk Low-bid contractor selection increases risk of performance problems Reduced collaboration between designer, builder, and operators Potential of disputes, claims and change orders that may delay project completion 	<ul style="list-style-type: none"> Multiple points of responsibilities Owner warranties design documents No legal obligation linking designer to builder Potential for disputes, claims and change orders that may delay schedule 	<ul style="list-style-type: none"> Costs beyond lump sum unknown to Owner Owner loses independent construction oversight Owner involvement becomes very limited once price is established (usually 30% or less design level) Design drawings are not as detailed 	<ul style="list-style-type: none"> Open book bidding may require more time than DB lump sum More design effort than DB lump sum 	<ul style="list-style-type: none"> Costs beyond lump sum unknown to Owner Owner loses independent construction oversight Owner involvement becomes very limited once price is established (usually 30% or less design level) Design drawings are not as detailed Owner is hands off for long-term performance and operations
Best Application	<ul style="list-style-type: none"> Owner desires high degree of involvement during design High degree of public oversight desired Schedule is not a priority Owner has trained operations staff available 	<ul style="list-style-type: none"> Owner desires high degree of involvement during design Owner has trained operations staff available 	<ul style="list-style-type: none"> Time is critical and existing conditions and desired outcomes are well understood Owner does not want direct involvement in design and construction Operational and aesthetic issues are well defined Conventional, well-understood technology Owner has trained operations staff available 	<ul style="list-style-type: none"> Time is critical Owner has trained operations staff available Owner desires high degree of involvement during design 	<ul style="list-style-type: none"> Time is critical and existing conditions and desired outcomes are well understood Owner does not have experience operating the facility Owner does not want direct involvement in design, construction or operations
Variations	<ul style="list-style-type: none"> Bidding alternatives that provide more confidence that a qualified bidder is selected versus the low-bid scenario; Design, Prequalify Bidders, Bid, Build; Design, Value Based Bid, Build; Design, Bid, Bid Average, Build 	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> Also known as: Engineer, Procure, Construct (EPC). With EPC, the engineer holds the contracts for the subcontractors, where as in the DB (GMP) the design/builder may be either contractor or engineer led. 	<ul style="list-style-type: none"> Design, build, operate, maintain transfers responsibility to a second party for the life of the project.