Overview of Collaborative Delivery Methods
**Glossary of Terms**

**Builder or Constructor.** The entity responsible for performing construction on a design-build project.

**Collaborative project delivery (CPD).** A comprehensive term encompassing various forms of design-build (DB) project-delivery methods—including construction management at-risk (CMAR)—that fosters a cooperative relationship among the owner, the designer, and the builder in an integrated design and construction process.

**Construction management at-risk (CMAR).** A delivery method in which the project design is the responsibility of an engineering firm retained by the owner. Construction is the responsibility of a
Spectrum of Collaborative Project Delivery Options

Traditional – Collaborative – Design-Build – DBO – P3

- Owner
- Owner’s Advisor
- CMAR
- Design-Build-Operator
- Design-Build
- O&M Firm

Project Company (Also Special Purpose Entity)
Contractual Relationship
Contract Amendment for GMP or Lump Sum
Contract Amendment to Approve Construction
Embedded Relationship
Baseline: Design-Bid-Build (DBB)

- Well established, defined, linear process that is proven to work
- Distinct milestones to ensure expected results
- Design completed before bidding
- Bidding completed before construction
- Traditional “cast” of participants

The traditional project delivery system for Public Entities under which the Owner holds separate contracts with a Designer followed by a Contractor.

Selection based on qualifications, technical approach

Selection based on price
Construction Management at Risk (CMAR)

- Similar to traditional delivery, but can be faster
- Allows traditional selection of Consulting Engineer
- Design-build “lite” – with an “arranged marriage”
- Two contracts with Owner
- Design and construction pricing in parallel
- Familiar “cast” of participants

The design is performed in parallel with the construction planning and estimating.

Construction starts after mutual agreement on price.

CMAR selected on quals and fee%

Design engineer selected traditionally

Price Agreement Prior to Construction
Multiple Approaches to Design-Build (DB)

A single entity or purpose-built team to deliver both Design and Construction through one contract with the Owner.

There are several commonly used variations of design-build:

• Progressive (PDB)
• Fixed-Price (FPDB)
• Design-Build-Operate (DBO)
  - Single Entity
  - Multiple Entities
Progressive Design-Build (PDB)

- Concurrent activities reduce schedule – construction can start before design is complete
- Selection based on quals and fee, not a fixed price
- “Design to budget” via design and estimate iteration
- GMP, Lump Sum, and Shared Savings options
- Hard-bid “off-ramp” if construction pricing not acceptable
- New cast of participants

A single entity or purpose-built team to deliver both Design and Construction via a single contract.

Design detail and construction estimate is developed progressively.

Construction starts after mutual agreement on price.

Based on collaboratively developed scope and design

Defines quals criteria; short lists qualified firms

Selection based on qualifications and fee %
Fixed Price Design-Build (FPDB)

- Multiple variations - two-phase selection is common
- Lengthy procurement process, reduced delivery time
- The Proposal is essentially a “Design Competition”
- May use performance-based criteria or prescriptive criteria – or usually a balance of both
- Construction price fixed at selection
- Variable “cast” of participants, depending on project complexity

A single entity or purpose-built team to deliver both Design and Construction via a single contract.

Design detail and construction estimate provided as part of a fixed-price proposal.

Construction can start quickly after selection.

Performance-based and Prescriptive Criteria

Short list based on capability, capacity, experience, references

Selection based on “best value” (technical + price)
Design-Build-Operate (DBO) Single or Multiple Entities

A single entity or purpose-built team to deliver Design, Construction, and Operations via a single contract.

Design detail, construction estimate, and O&M pricing provided as part of a fixed-price proposal.

Construction can start quickly after selection, O&M commences upon construction completion.
Public-Private-Partnership (P3)
Design-Build with Financing and/or Operations

A purpose-built entity that often arranges financing and then oversees delivery of Design and Construction, typically followed by long-term Operations, all under a single Project Agreement.

Any variety of collaborative delivery approaches can be embedded to support the P3 entity in design-build and operations delivery.

Any financing and development costs; design, construction; and O&M pricing provided as part of a fixed-price proposal.
## Delivery Methods: Summary of Key Attributes

<table>
<thead>
<tr>
<th>Most accepted method</th>
<th>Allows Owner involvement</th>
<th>Performance risk transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market-test</td>
<td>Creates collaborative environment</td>
<td>Schedule acceleration</td>
</tr>
<tr>
<td>Initial cost certainty</td>
<td>Potential schedule acceleration</td>
<td>Owner can stay involved (PDB)</td>
</tr>
<tr>
<td>Existing procedures/contracts</td>
<td>Accepted procurement process</td>
<td>Design to budget (PDB)</td>
</tr>
<tr>
<td>Legal everywhere</td>
<td>High market acceptance</td>
<td>Availability of off-ramp (PDB)</td>
</tr>
<tr>
<td></td>
<td>Availability of the off-ramp</td>
<td>Early cost certainty early (FPDB)</td>
</tr>
<tr>
<td></td>
<td>Potential for shared savings</td>
<td>Potential for innovation (FPDB)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Attributes</th>
<th>Owner responsible for scope and unforeseen conditions</th>
<th>Owner responsible for scope and unforeseen conditions</th>
<th>Owner responsible for scope and unforeseen conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner responsible for scope and unforeseen conditions</td>
<td>Owner responsible for scope and unforeseen conditions</td>
<td>Owner responsible for scope and unforeseen conditions</td>
<td>Owner responsible for scope and unforeseen conditions</td>
</tr>
<tr>
<td>Owner “owns” delivery issues</td>
<td>Owner “owns” delivery issues, but mitigates challenges early</td>
<td>Design-builder takes responsibility for delivery</td>
<td>Design-builder takes responsibility for delivery</td>
</tr>
<tr>
<td>Well-understood risk allocation (history of Change Orders)</td>
<td>Existing risk allocation managed with early contractor involvement</td>
<td>Appropriate risk transfer (performance, schedule, permits)</td>
<td>Appropriate risk transfer (performance, schedule, permits)</td>
</tr>
<tr>
<td>Specification-based</td>
<td>Specification-based with input</td>
<td>Performance-based</td>
<td>Performance-based</td>
</tr>
<tr>
<td>Predictable schedule (linear and usually longer)</td>
<td>Accelerated schedule; concurrent procurements</td>
<td>Potentially fastest delivery; Concurrent design/construct</td>
<td>Potentially fastest delivery; Concurrent design/construct</td>
</tr>
<tr>
<td>Proven and familiar, but known challenges to success</td>
<td>Design-Build “lite” – familiar yet introduces collaboration</td>
<td>Proven, but not as familiar Ensures collaboration</td>
<td>Proven, but not as familiar Ensures collaboration</td>
</tr>
<tr>
<td>Multiple contracts and separate deliverables</td>
<td>Multiple contracts; coordinated deliverables</td>
<td>Single contract; single-point responsibility</td>
<td>Single contract; single-point responsibility</td>
</tr>
<tr>
<td>Multiple procurements</td>
<td>Multiple procurements</td>
<td>Single procurement</td>
<td>Single procurement</td>
</tr>
<tr>
<td>Existing procurement process</td>
<td>Adapt existing process</td>
<td>New procurement process</td>
<td>New procurement process</td>
</tr>
<tr>
<td>Traditional roles</td>
<td>Traditional roles/untraditional times</td>
<td>New roles</td>
<td>New roles</td>
</tr>
</tbody>
</table>
Extra Slides
Holding Bin
Fixed Price Design-Build (FPDB)

A single entity or purpose-built team to deliver both Design and Construction via a single contract.

Performance-based and Prescriptive Criteria

- Implementation Plan
- RFQ Process
- RFP Process
- Short List Interview
- Select Design-Builder
- Manage Design-Build Contract
- Transition Operations
- Operations

- SOQ
- Design-Build Approach & Price
- Design & Construction
- Commissioning & Start-Up
- Warranty
## Fixed Price Design-Build (FPDB)

### Performance-based and Prescriptive Criteria

#### Performance

**“This is how it must perform”**

*The RFP Defines:*
- Treatment process inputs/outputs
- Site boundaries and constraints
- Facility functional standards
- Equipment performance schedule
- Acceptable materials standards

*Proposal Process Emphasizes:*
- Clarification of Owner’s intent
- Confirmation that required standards will be reliably met

*Evaluation Method Promotes:*
- Innovation to increase value
- Balance between price and robustness of design approach

*Design-Builder Commits to:*
- Applicability and feasibility of required standards

- Others’ design, if any, used for reference only

- Confidential Meetings to clarify expectations

- RFI process to confirm requirements

- Performance under defined environmental conditions and influent characteristics

- Availability, quality, and quantity of treated flow

### Prescriptive

**“This is exactly what I want”**

*The RFP Requires:*
- Specific treatment process
- Acceptable site layout
- Detailed facility configuration
- Specific types of equipment
- Schedule of acceptable materials

*Proposal Process Emphasizes:*
- Documentation of Owner’s requirements
- Validation of conformance

*Evaluation Method Promotes:*
- Lowest conforming price
- Incremental improvements to owner’s required design

*Design-Builder Commits to:*
- Applicability and effectiveness of the Owner’s requirements
### Fixed Price Design-Build (FPDB)

<table>
<thead>
<tr>
<th>Performance</th>
<th>Hybrid</th>
<th>Prescriptive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“This is how it must perform”</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The RFP Defines:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Treatment process inputs/outputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Site boundaries and constraints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Facility functional standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Equipment performance schedule</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Acceptable materials standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposal Process Emphasizes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clarification of Owner’s intent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Confirmation that required standards will be reliably met</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation Method Promotes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Innovation to increase value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Balance between price and robustness of design approach</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Design-Builder Commits to:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Applicability and feasibility of required standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>“This how it must perform, with some specific preferences”</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The RFP Defines:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Process parameters and specific constraints or requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Site boundaries minimum functional restrictions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Required equipment and materials by exception only</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposal Process Emphasizes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Understanding of Owner’s intent and basis of specific requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Confirmation of overall approach and validation of conformance where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation Method Promotes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Innovation to increase value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Balance between price and robustness and conformance of design approach</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Design-Builder Commits to:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Applicability and effectiveness of the Owner’s requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>“This is exactly what I want”</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The RFP Requires:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Specific treatment process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Acceptable site layout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Detailed facility configuration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Specific types of equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Schedule of acceptable materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposal Process Emphasizes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Documentation of Owner’s requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Validation of conformance</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation Method Promotes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lowest conforming price</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Incremental improvements to owner’s required design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Fixed Price Design-Build (FPDB)

### Performance-based and Prescriptive Criteria

<table>
<thead>
<tr>
<th>Performance</th>
<th>Hybrid</th>
<th>Prescriptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>“This is how it must perform”</td>
<td>“This how it must perform, with some specific preferences”</td>
<td>“This is exactly what I want”</td>
</tr>
</tbody>
</table>

#### Best Practice:

**Constrain potential solutions only as necessary to maintain required standardization or to eliminate risky, totally unproven technologies.**

**The RFP Defines:**
- Process parameters and specific constraints or requirements
- Site boundaries minimum functional restrictions
- Required equipment and materials by exception only

**Proposal Process Emphasizes:**
- Understanding of Owner’s intent and basis of specific requirements
- Confirmation of overall approach and validation of conformance where applicable

**Evaluation Method Promotes:**
- Innovation to increase value
- Balance between price and robustness and conformance of design approach

**Best Practice:**

**Define prescriptive requirements by exception only when clearly needed to maintain compatibility, integrate with existing systems, or avoid known, documented risks.**

**Design-Builder Commits to:**
- Applicability and feasibility of required standards

**Design-Builder Commits to:**
- Applicability and effectiveness of the Owner’s requirements