Inner Harbor Water Treatment Campus
Progressive Design-Build Presentation

Corpus Christi, Texas
June 17, 2025

Water Collaborative Delivery Association
Better Projects, Together.

Welcome to the Water Collaborative Delivery Association

Fundamentals of Collaborative Delivery Education

Based on the WCDA *Water and Wastewater Collaborative Delivery Handbook, 6th Edition*

watercollaborativedelivery.org

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Better Projects, Together.

Fundamentals of **Progressive Design-Build**

Introductions: **Who We Are**

Chapter 2: **Making Sense of Collaborative Delivery Options**
PDB Common Terminology

Chapter 3: **Allocating Risks Beyond Standard of Care**
PDB Performance Requirements and Guarantees

Chapter 4: **Understanding Contracts**
PDB Unique Contractual Concepts
PDB GMP and LS Contract Price Implementation

Wrap Up: **Questions**

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Leofwin Clark

Leofwin Clark is an independent collaborative delivery consultant focused on owner advisory and training services from procurement through completion for CMAR, DB, and O&M projects. Mr. Clark has 30+ years of experience in infrastructure advisory services, with a focus on DB) DBO, and P3 for water/wastewater and transportation projects.

Leofwin is considered an industry thought-leader for collaborative delivery education, training, research, and the application of collaborative and P3 delivery models for the water and wastewater industry.

Leofwin is currently a consultant to the Water Collaborative Delivery Association and served as a WCDA (*formerly Water Design-Build Council*) Past President (2016) and Education Committee Chair (2017-2021). As WCDA's Education Director, he is currently responsible for leading the development of educational curriculum and for conducting regular seminars and workshops on behalf of the WCDA.

Leofwin is President of an independent owner advisor consultancy firm, *All Things Collaborative Delivery.*

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WCDA Who We Are

Transforming the water industry by advancing collaborative delivery methods through education, research, and advocacy

Water Collaborative Delivery Association

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The Water Collaborative Delivery Association is a leading professional association dedicated to advancing successful collaborative delivery solutions for the water and wastewater industry. Through education, research, and advocacy, we empower practitioners and owners with the knowledge, tools, and resources to collaborate and innovate effectively, lead change, and achieve successful project outcomes.

Founded in 2006 by a small group of the nation's leading water and wastewater design-build firms, WCDA has since grown to become a leading professional association serving a diverse array of industry experts, practitioners, suppliers, and owners.

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2. Making Sense of Collaborative Delivery Options

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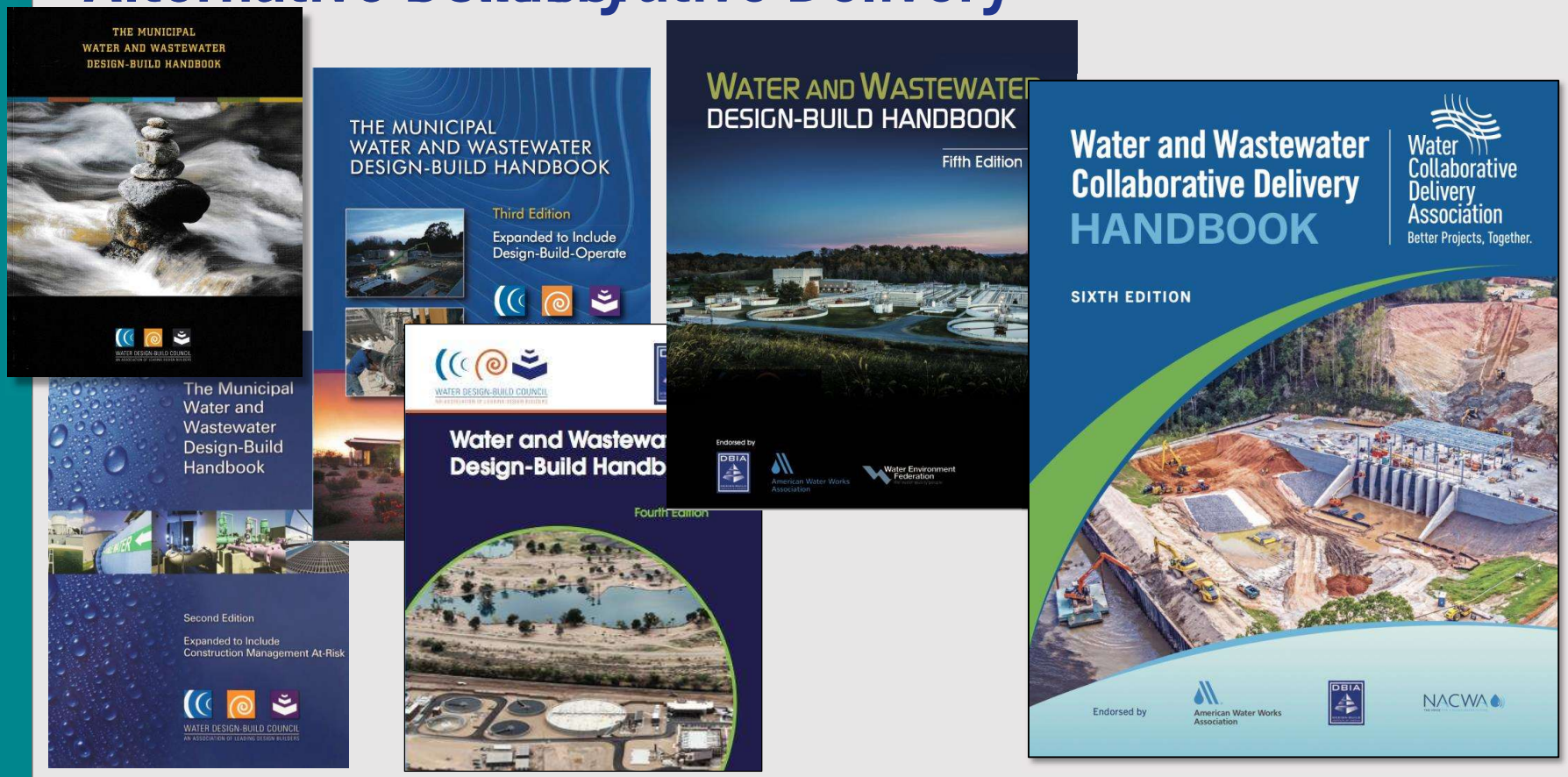
~~"Alternative~~ Delivery"



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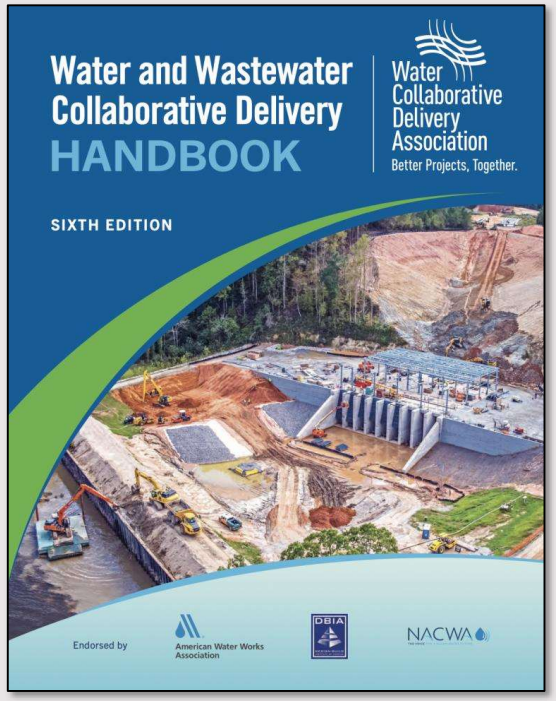
"~~Alternative~~ Collaborative Delivery"

Making Sense of Collaborative Delivery Options

CHAPTER 2

As design-bid-build (DBB) delivery gives way to collaborative delivery methods, owners have had to become more sophisticated in their understanding of the options available. Today's primary collaborative delivery methods include construction management at-risk (CMAR), progressive design-build (PDB), fixed-price design-build (FPDB), design-build-operate (DBO), and public-private partnerships (P3).

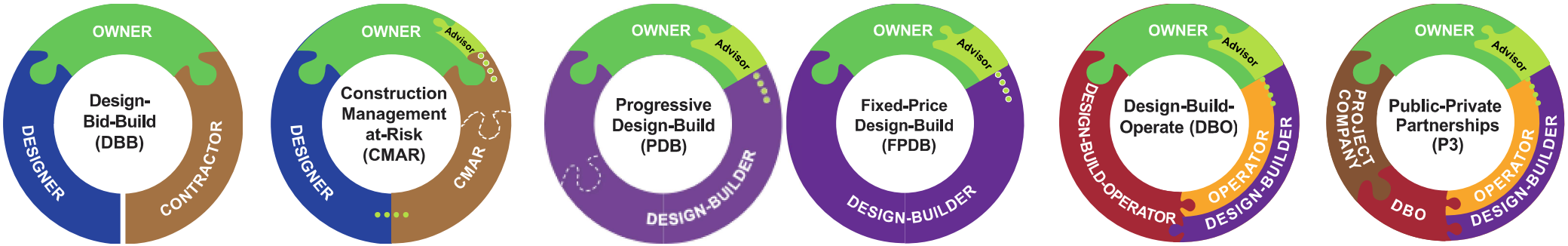


What Do We Mean by Collaborative Delivery?

Collaborative delivery is the catch-all term used throughout the handbook to refer to project delivery methods involving a significant degree of interaction between the owner (including O&M staff), designer, and contractor.

Spectrum of Collaborative Project Delivery Options

Traditional DBB | **Collaborative Delivery** CMAR | Design-Build | Design-Build-Operate | P3



"Cast" of Participants

- Owner
- Owner Advisor
- Designer
- Contractor/CMAR
- Design-Builder
- Design-Build-Operator
- Operations and Maintenance Firm
- Special Purpose Project Entity/Finance

Types of Relationships

- No Contractual Relationship
- Contractual Relationship
- Contract Amendment for GMP or Fixed Price
- Embedded Relationship (not contractual, but required critical interaction)

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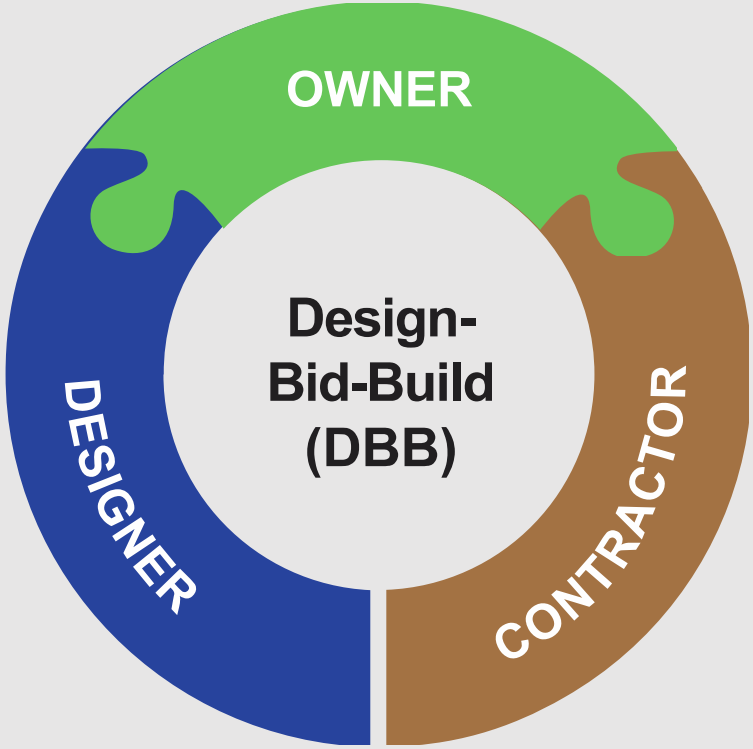
Baseline: **Design-Bid-Build (DBB)**

- Traditional “cast” of participants
- Widely accepted, well established linear development process
- Distinct milestones that create expected results
- Design is completed prior to bidding
- Bidding is completed prior to construction



The traditional project delivery method for public entities under which the owner holds **separate contracts** with a designer followed by a contractor

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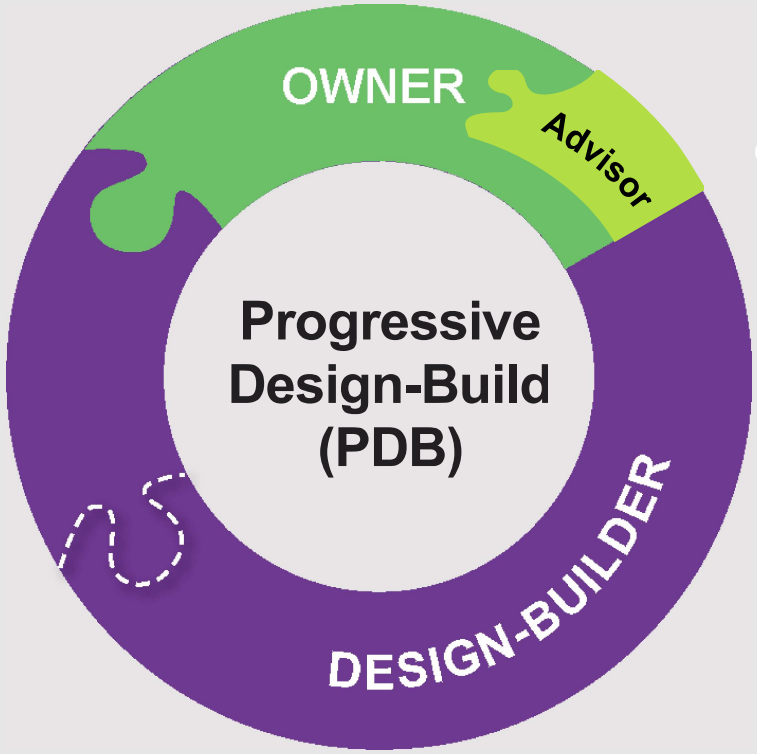
Progressive Design-Build (PDB)

- New cast of participants
- Concurrent activities can shorten schedule – construction start before design is complete
- Selection based on quals and (optional) price/fee, but not a bid or fixed price
- "Design to budget" via design/estimate iteration
- GMP, Lump Sum, and shared savings options
- "Off-ramp" option

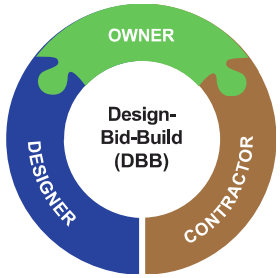


A single entity or purpose-built team to deliver both design and construction via a **single contract**

Design detail and construction estimate is developed **progressively**

Construction starts upon mutual **Contract Price** agreement

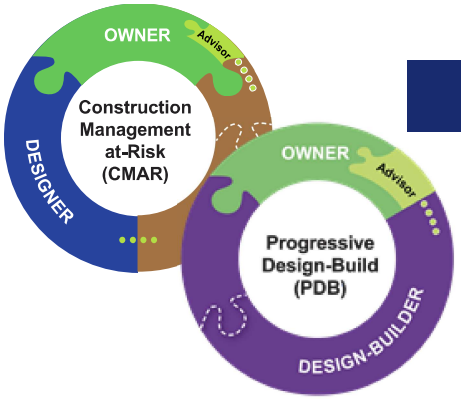
Commercial Concepts: When Will You Know The Construction Price?



CHANGE ORDERS?

100% Design | BID | $ | Build | +$

AS-BID CONSTRUCTION PRICE Closed Book; Cost and Contingency never disclosed



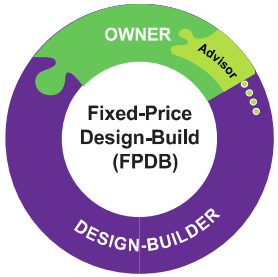
OPTION: LUMP SUM Closed book, no further adjustments*

≈60% Design | $ | Build | -$

OPTION: GUARANTEED MAXIMIM PRICE Open book, potential shared savings at completion*

GUARANTEED PRICE Fee added to Cost to establish Price

CONSTRUCTION COST Open Book; Scope and Contingency collaboratively developed



Proposal | $ | Build

FIXED PRICE Closed Book; Cost and Contingency never disclosed, no further adjustments*

* Owner scope changes and unforeseen conditions are generally the only allowable changes

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3. Understanding and Allocating Risks
4. Understanding Contracts

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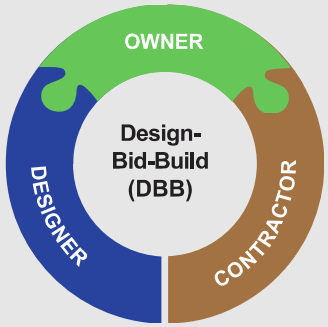
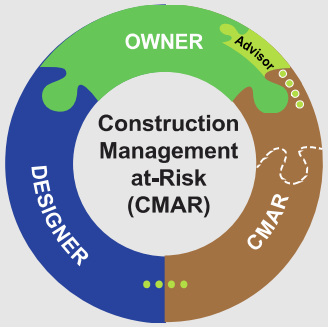
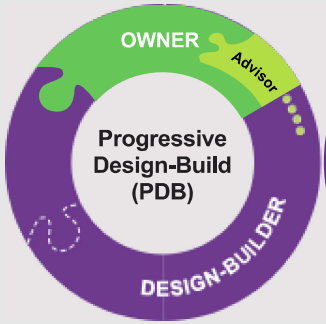
A Fundamental Shift in Risk Allocation

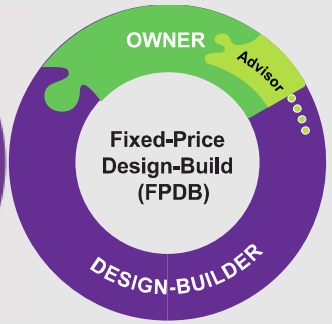
Traditional Risk Allocation





Performance-Based Risk Allocation





Professional Services
"Design"

"Bid"

Construction
"Build"

Single Entity or Consortium
"Design-Build"

Defined Deliverables

Defined Project Performance

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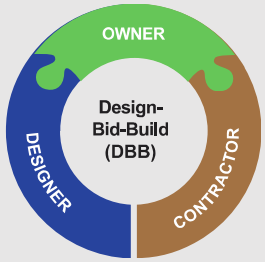
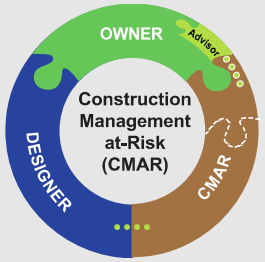
A Fundamental Shift in Risk Allocation

Traditional Risk Allocation





Professional Services
"Design"

Scope
Planning, consulting, **design**, engineering, design, services during construction.

$$
Typically sold as **billable hours.**

Risk
Standard of Care, competence is assumed, but responsibility for total installed cost and performance ultimately transferred to the Owner.

"Bid"

Construction
"Build"

Scope
Equipment, materials, construction, startup, and construction warranty.

$$
DBB: Typically bid as a **fixed price.**
CMAR: **Proposed preconstruction price** and **fee on actual cost**, delivered on a **GMP** or **lump sum** basis

Risk
Conformance with As-Bid Documents, verified by a third-party, independently tested where appropriate, and managed through a quality compliance mechanism.

Defined Deliverables

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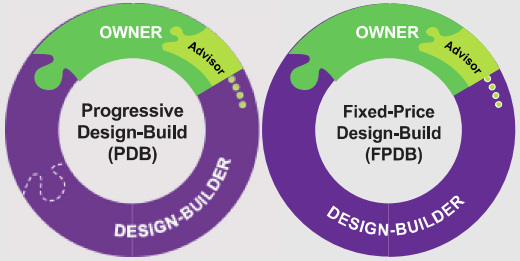
Design-Build: A Fundamental Shift in Risk Allocation

Performance-Based Risk Allocation



Single Entity or Consortium

"Design-Build"

Scope

A comprehensive project, inclusive of all scope from design through construction, and sometimes short- or long-term O&M.

$$

PDB: **Proposed preconstruction price** and **fee on actual cost**, delivered on a **GMP** or **lump sum** basis

FPDB: a **fixed price for the entire project**.

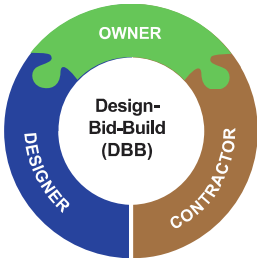
Risk

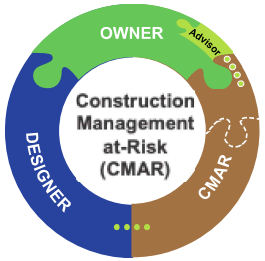
Commitment to performance within a contractually defined set of parameters.

Defined Project Performance

Design-Build: A Fundamental Shift in Risk Allocation

Traditional Risk Allocation





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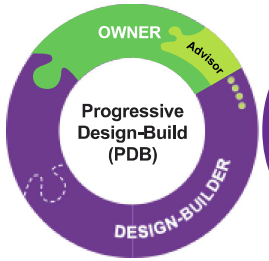

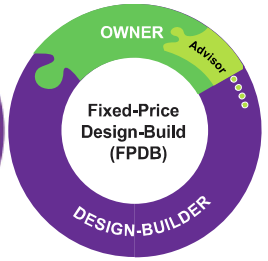

Single Entity or Consortium
"Design-Build"

Scope
A comprehensive project, inclusive of all scope from design through construction, and sometimes short- or long-term O&M.

$$
Proposed **fee on actual cost** (Progressive) delivered on a **GMP** or **lump sum** basis; or a **fixed price.**

Risk
Commitment to performance within a contractually defined set of parameters.

Defined Project Performance

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The Contract:
Familiar Terms Viewed Through a "Risk Lens" Context and New Terms Specific to Two-Phase Delivery (PDB and CMAR)

Familiar, But Different:

- Limits of Liability
- Liquidated Damages
- Consequential Damages
- Indemnification
- Construction Warranty

- Design-Build Performance Requirements

New to Two-Phase Delivery:

- Definition of Cost/Cost of Work
- Open Book
- Price
  - Preconstruction Services
  - Construction Fee
- Shared Savings
- The Off-Ramp

The Contract: Performance Requirements and Guarantees

Performance Guarantees

For design-build projects, a potentially broad set of obligations related to the facility functioning as envisioned.

Performance Guarantees

As discussed previously, design-build contracts in the water/wastewater sector often contain performance guarantees. While the scope of the guarantee can differ from project to project, performance guarantees are intended to assure the owner that if the plant receives the expected influent (i.e., untreated wastewater or water within a defined specification) the plant (or even a specific process or piece of equipment) will meet its treatment performance requirements for effluent quality, energy use, chemical consumption, etc., as defined in the project contract.

Performance guarantees are typically satisfied by acceptance tests specified in the collaborative delivery contract. Establishing appropriate performance testing and guarantee requirements can be complex, particularly where input characteristics vary significantly. While it's a good idea to consider future flow conditions during acceptance testing, actual performance testing of future flow conditions may not be possible. Owners should establish reasonable ranges of performance and testing requirements over a period of time rather than a single snapshot.

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Performance-Related Definitions for Design-Build

What is a performance *requirement*?
A performance requirement defines the measurable outcomes that a project or system must achieve, focusing on results rather than prescribing specific methods or design standards. It emphasizes flexibility and innovation, allowing a design-builder to meet objectives through its own solutions, with key metrics such as water quality, system reliability, and operational efficiency verified through testing and monitoring.

How is a performance requirement *measured*?
Performance requirements are measured by defining specific criteria, testing conditions, and interface points, often assessed during substantial completion using monitors and observation as part of an Acceptance test regime. These tests may require specific durations, resources, and conditions to simulate real-world performance.

What is a performance *guarantee*?
A performance guarantee is a design-builder's contractual commitment to achieve the defined performance requirements, backed by financial assurances or other remedies.
If performance criteria are not met, a design-builder must make corrections and retest the system, with potential mitigation, such as liquidated damages or rework, if the requirements remain unmet.

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Commercial Concepts: Definition of Cost

New to Two-Phase Delivery:

- Definition of Cost/Cost of Work
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Definition of Cost

- Critical foundation for all Open-Book methodologies: the contract should define what "Cost" means.
- Start with verifiable, documented actual cost of directly purchased goods and services.
- Define whether subcontracted scope is, by definition, a cost to the Prime Contract.
- Address "soft" cost such as overheads, equipment leasing, and other similar scope that can be open for interpretation.
- *Consider defining any "soft costs" up front, even if approximations (e.g., overhead rates).*

What are some other costs that are a challenge to validate?

How can these be defined ahead of time in the contract?

Cost of Work

For collaborative delivery methods that include open-book pricing (PDB and CMAR), the *cost of work* consists of all costs directly incurred by the collaborative delivery firm. These documented costs include construction labor, permanent materials (e.g., concrete and rebar), installed equipment, construction equipment, and trade contracts needed to build the project, as well as the collaborative delivery firm's general conditions costs (field management, supervision, and other field overhead costs needed to manage the project) and its contingency. Other expenses incurred by the collaborative delivery firm may include home office overhead expenses and some forms of insurance. Because these overhead expenses are typically considered non-reimbursable and are typically covered by the collaborative delivery firm's fee, it's important that they are fully understood by both the owner and collaborative delivery firm and negotiated as appropriate.

Commercial Concepts: Open Book

New to Two-Phase Delivery:

- Definition of Cost/Cost of Work
- Open Book
- Price
  - Preconstruction Services
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- The Off-Ramp

Open Book

- Requires costs to be clearly defined and validated.
- It means what it says: the estimate of costs is open, transparent, and shared among all parties.
- The degree of detail that is shared can be debated – but should be defined up-front.
- Subcontract quotes are treated as stand-alone costs, but the process for obtaining the quotes needs to be transparent.

Open-Book Pricing Process. In certain collaborative delivery methods where the collaborative delivery firm will produce a fixed price or GMP to construct the project, *open-book* price estimates are the norm during Phase 1. With open-book estimating, the collaborative delivery firm's development of the costs (labor, material, equipment, and subcontract costs) is transparent to the owner. The owner is also party to agreements on contingencies, allowances, overhead, and profit. Once the owner and the DB or CMAR firm agree on a price, the project can be implemented. Open-book pricing principles are fully explained at the end of Chapter 4.

Commercial Concepts: Cost vs. Price

New to Two-Phase Delivery:

- Definition of Cost/Cost of Work
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Fee

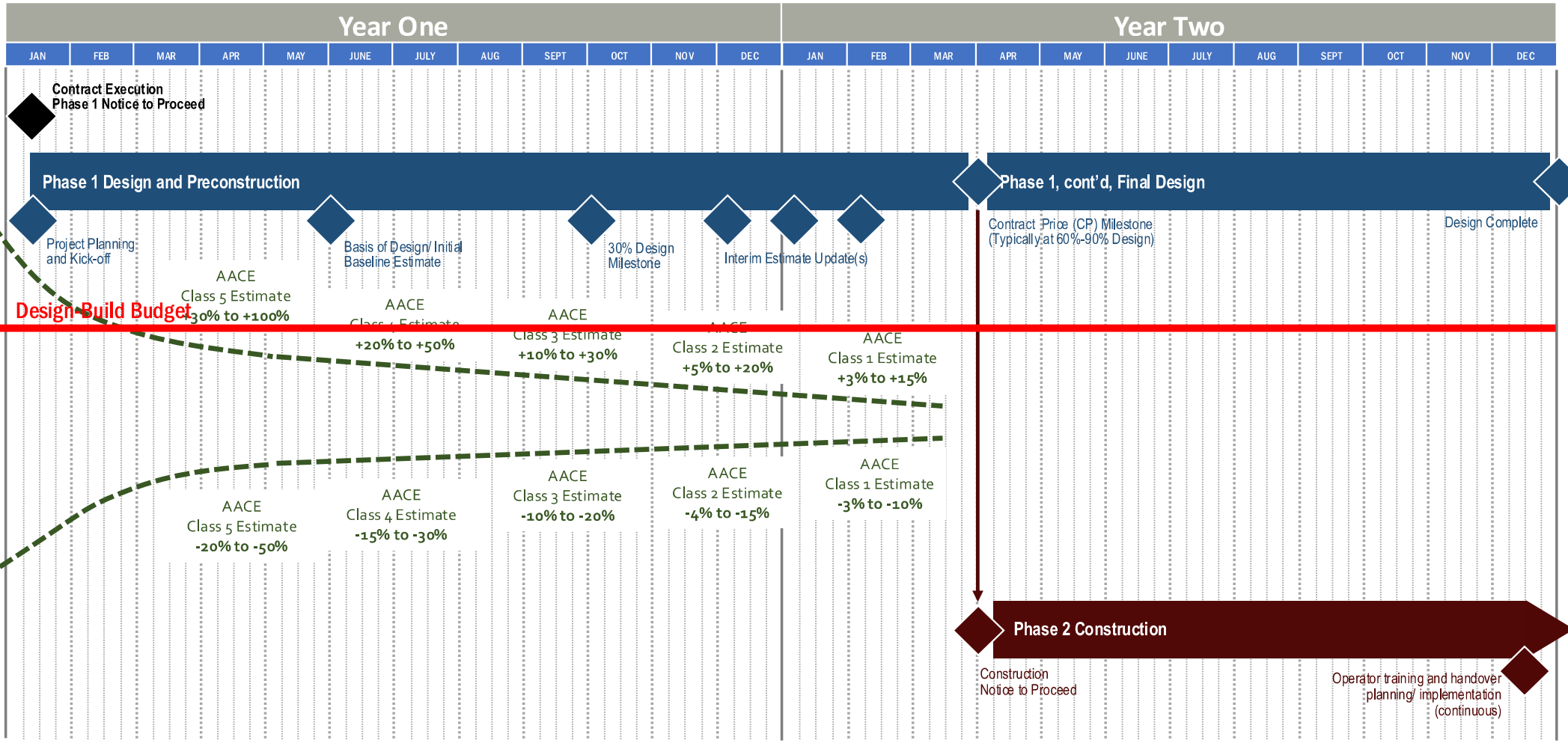
The term *fee* applies to all collaborative delivery projects using an open-book pricing mechanism. Typically, fee is defined to include all profit, overhead, and anything else that is not defined as a true cost of work (e.g., construction materials, cost of labor, etc.). The fee can be competitively proposed as part of the procurement process or negotiated between the owner and selected collaborative delivery firm. The fee may initially take the form of a percentage of the cost of work, but is often converted to a fixed dollar amount in the final contract price.

Price

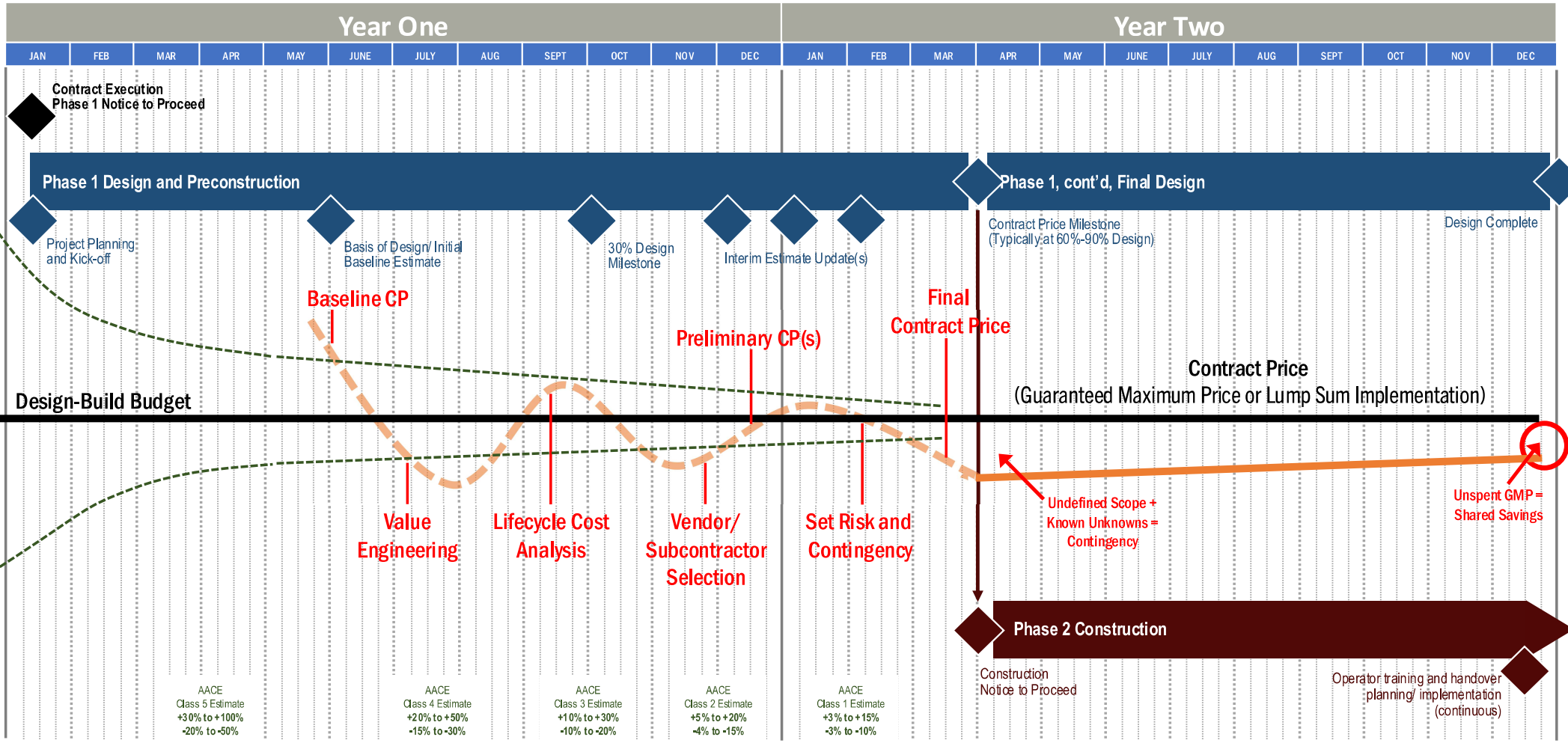
- ***Cost*** is not the same as ***price***.
- Price includes ***cost*** *plus* ***anything else*** – including profit.
- Hard Bid, Lump Sum, and Fixed-Price approaches combine ***cost*** *plus* ***anything else*** (such as profit) to equal the ***price***.
- GMP and other open book approaches define and document actual ***cost***.
- A ***Fee*** is then added to cover ***anything else*** (typically overhead and profit) to define the ***price***.

An open book cost with a fee added to create a price can be converted to a Lump Sum, closed book approach for delivery.

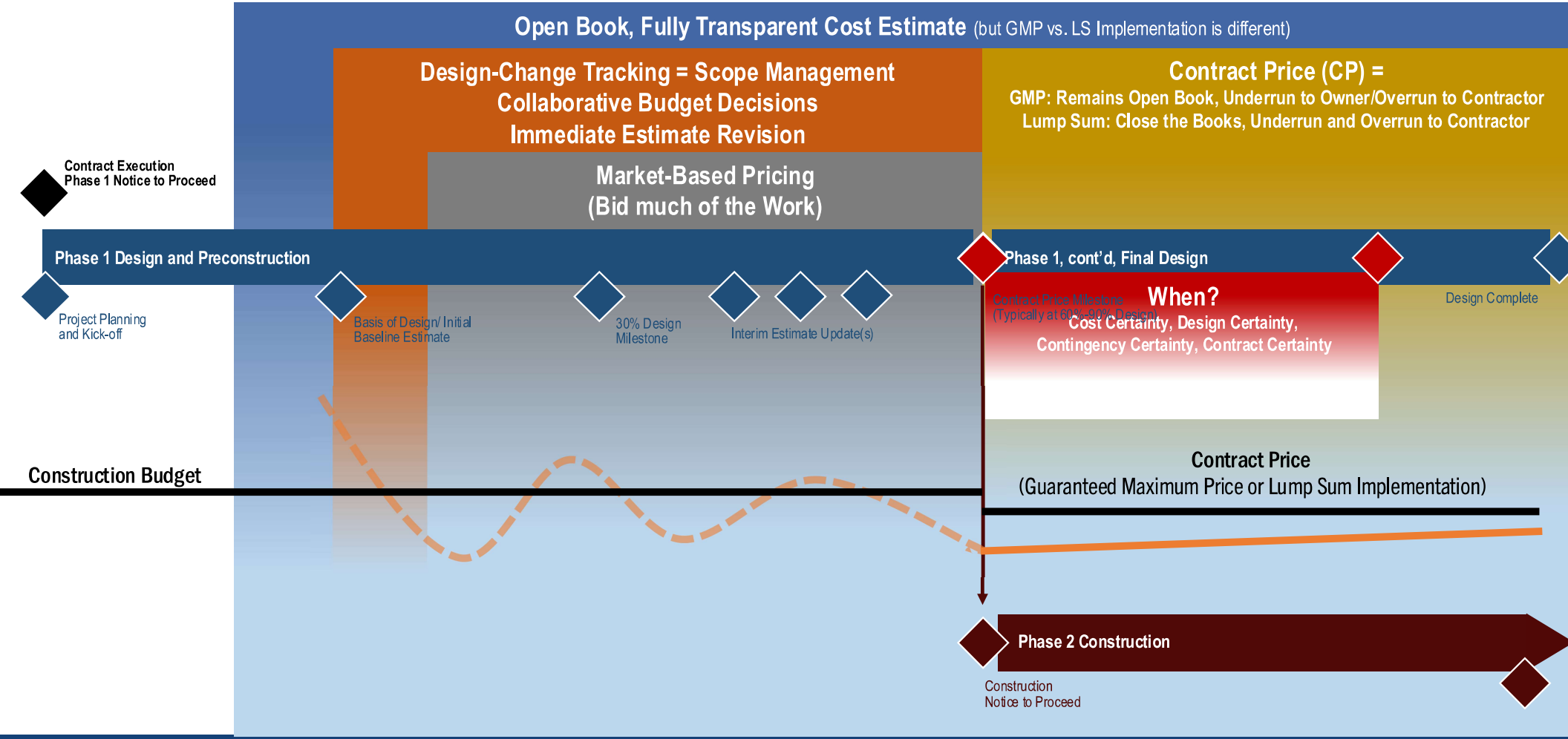
PDB Preconstruction Phase Progressive Cost Iteration



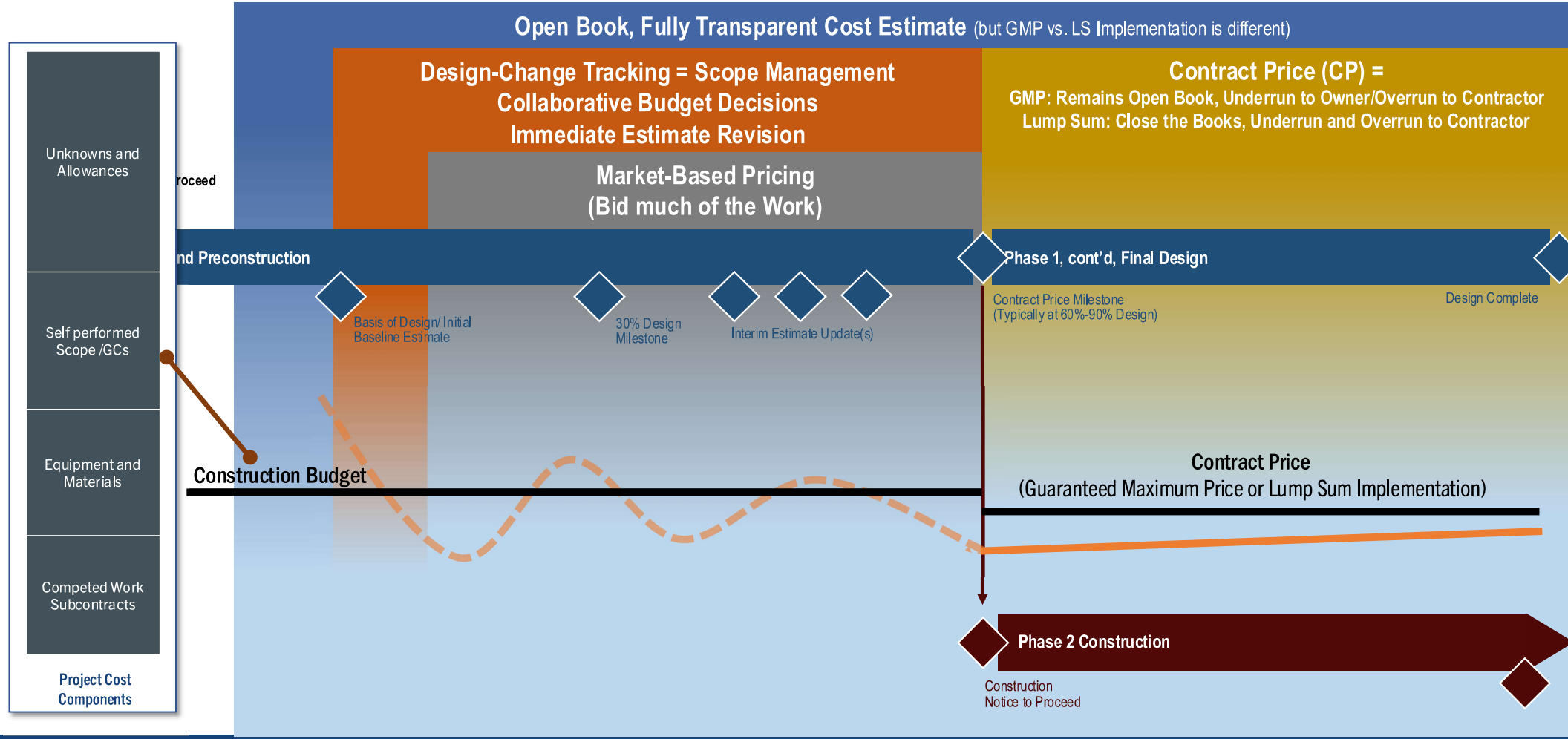
Preconstruction Phase Progressive Cost Iteration



CMAR | PDB: Preconstruction Phase **Cost** Iteration

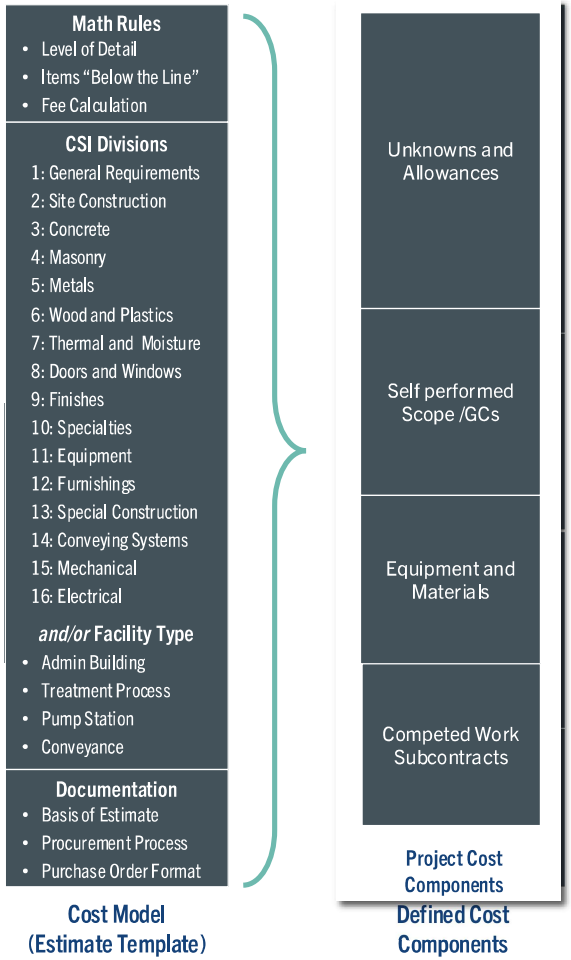


CMAR | PDB: Preconstruction Phase Cost Iteration



Cost versus Price

How the concept of cost transparency is critical

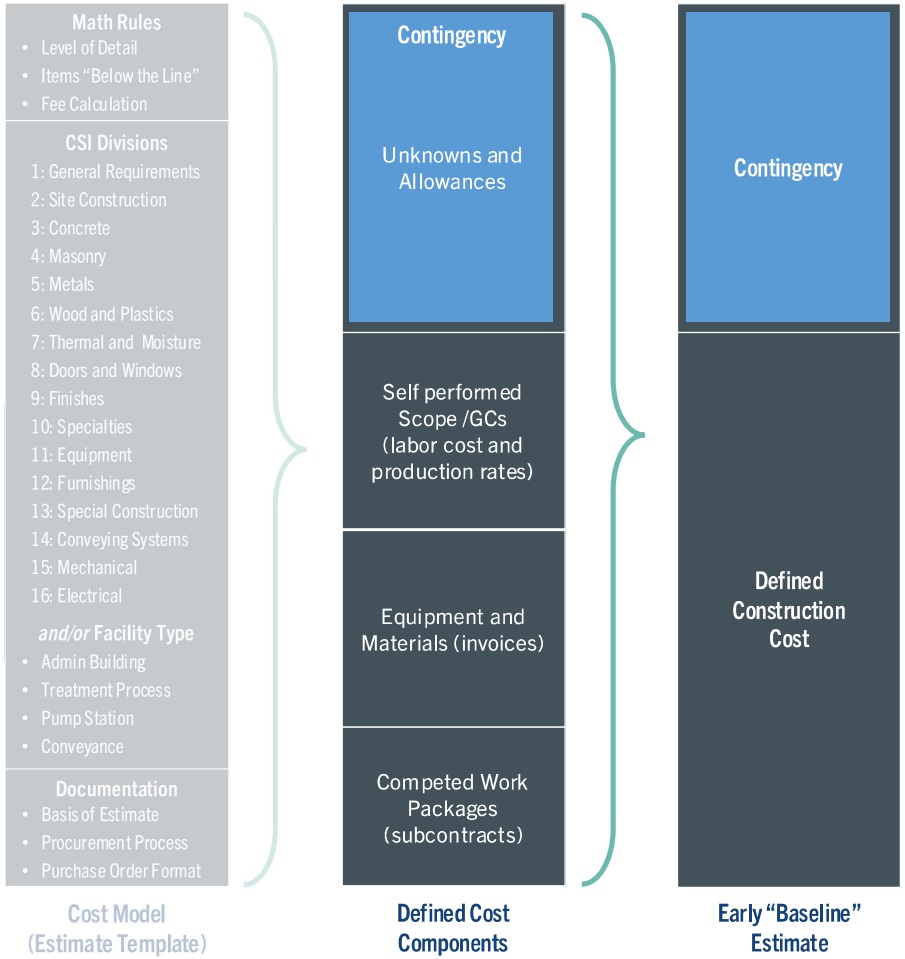


Definition of "Cost"

Define how costs will be documented or negotiated, and then verified

Cost versus Price

How the concept of cost transparency is critical



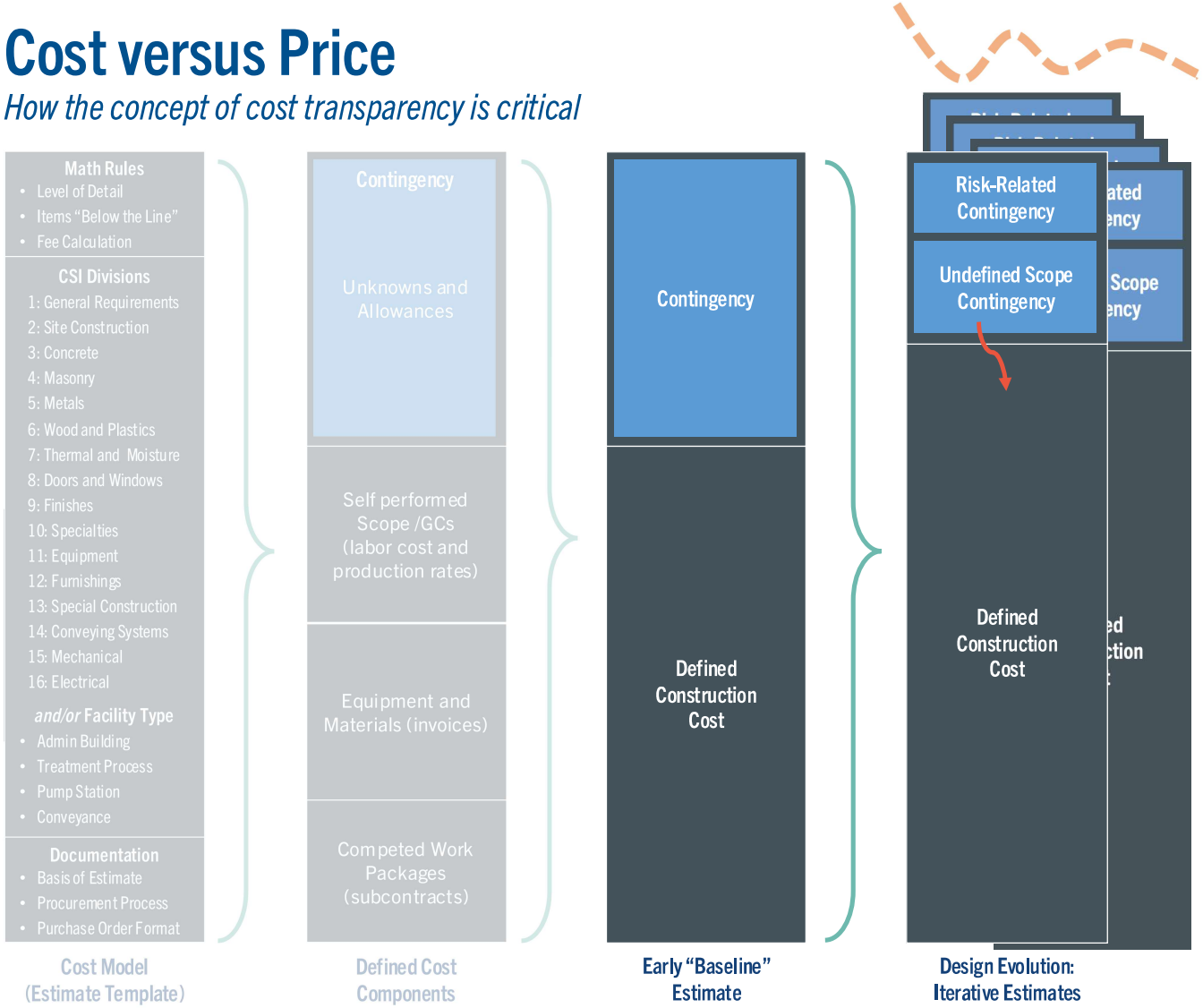
Recognize Unknowns As-You-Go

Early on:

Use placeholders for undefined scope

Cost versus Price

How the concept of cost transparency is critical



Identify Contingency That Represents Actual Risk

Funds set aside for "known unknowns" instead of undefined scope

Very limited undefined scope component

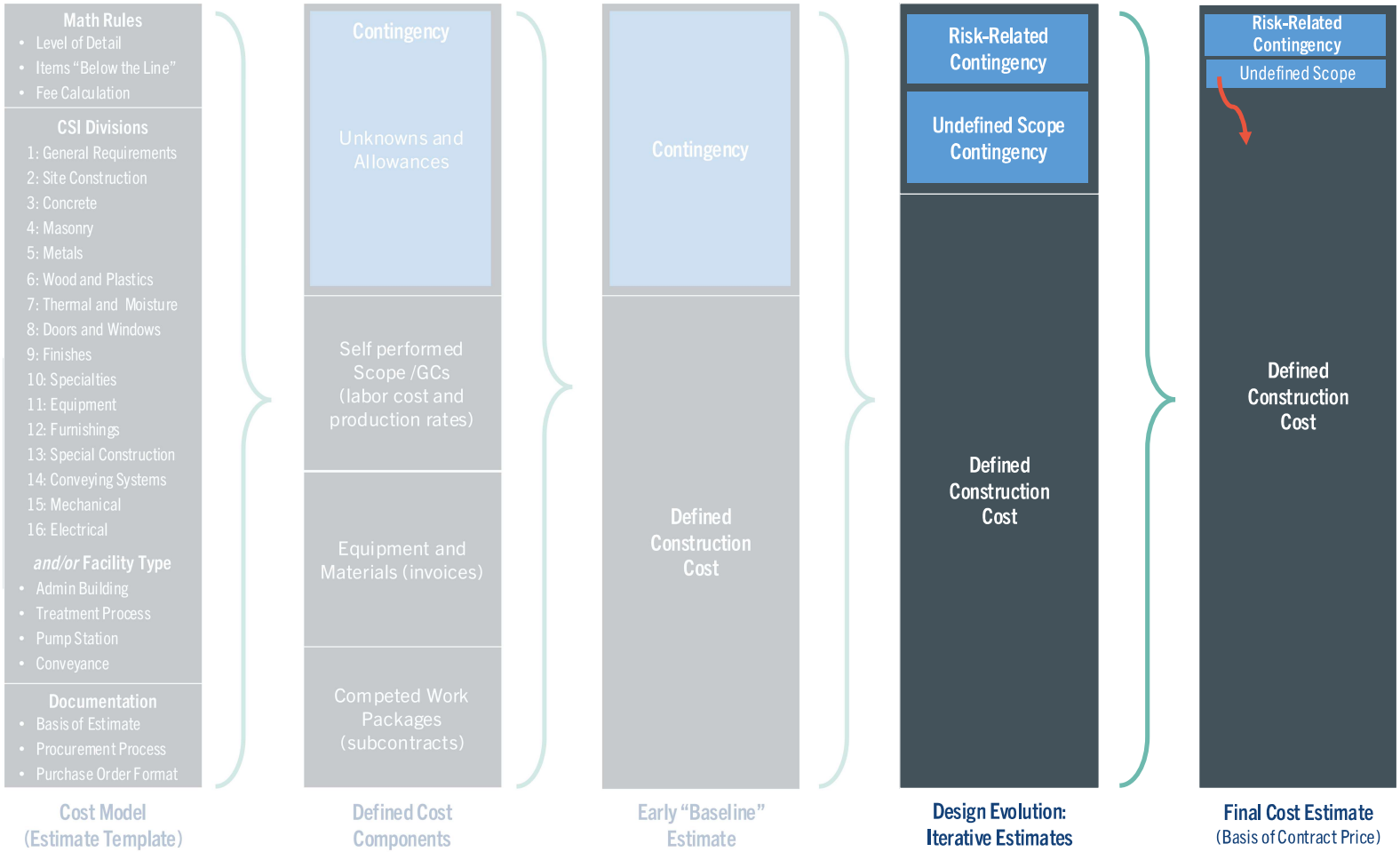
Move Undefined Scope to Defined Costs

Shift "plug numbers" to documented cost

Transforming contingency to defined cost *does not necessarily* increase overall budget

Cost versus Price

How the concept of cost transparency is critical



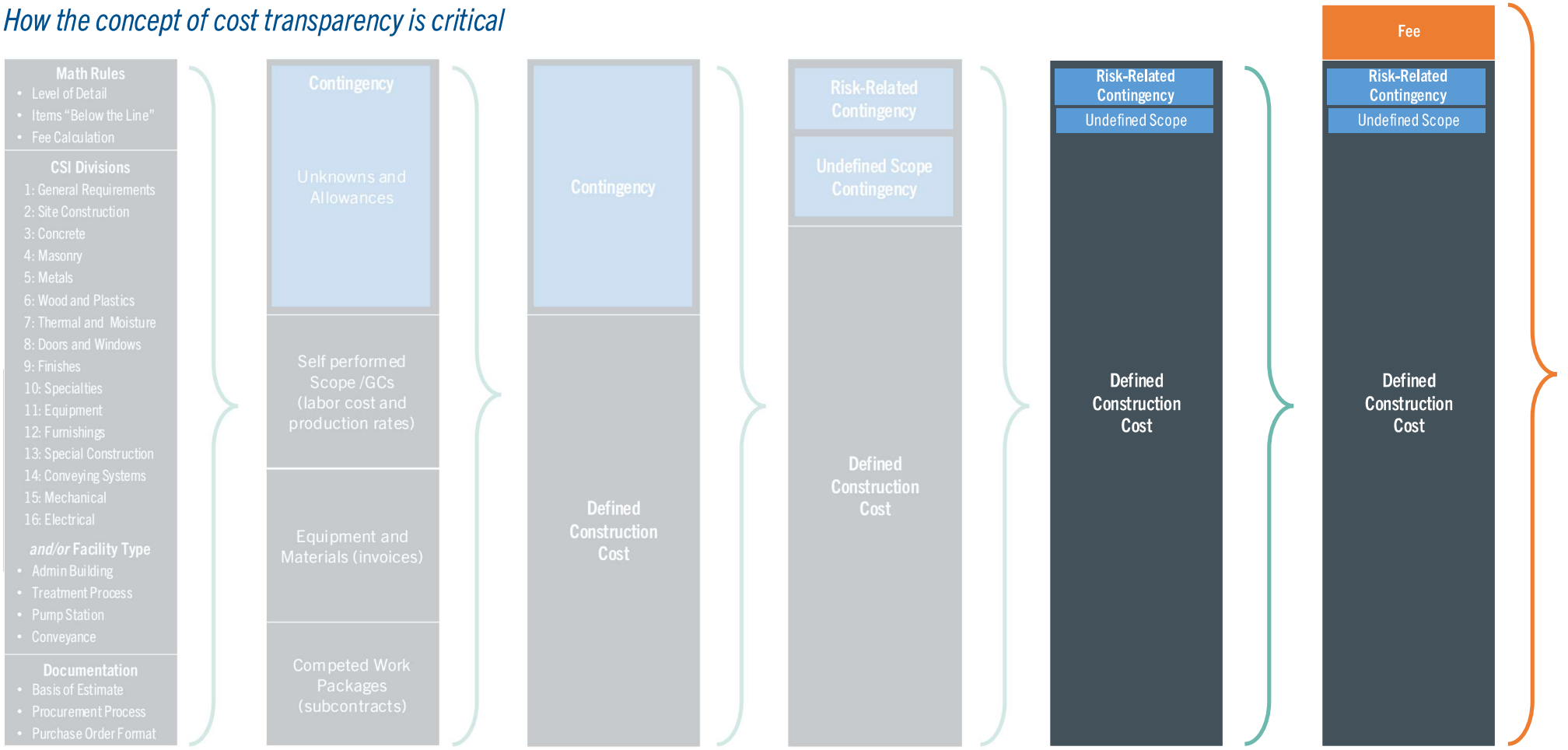
Contingency Becomes a Defined Cost

Risk quantification and analysis results in negotiated contingency cost element

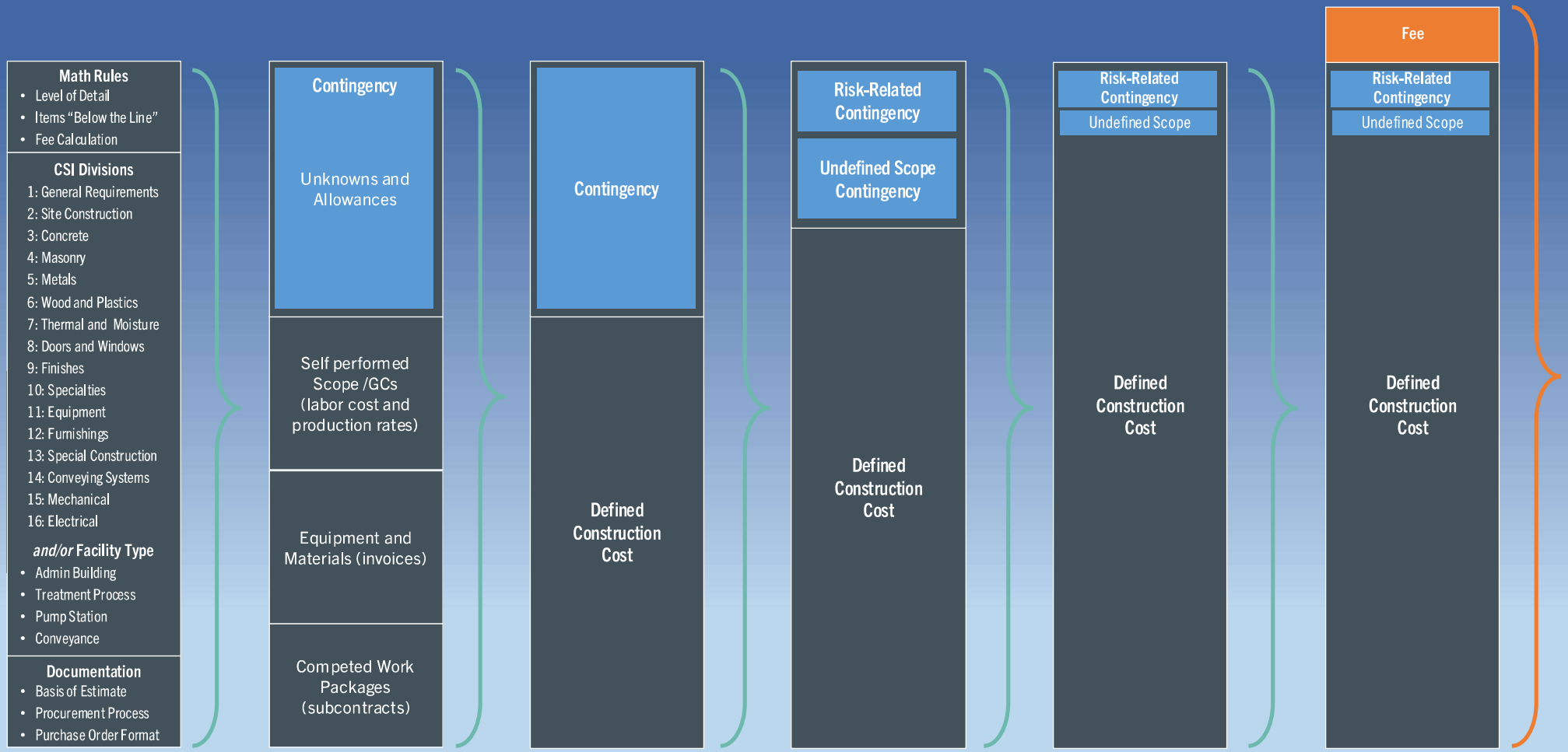
Very limited undefined scope component, *if any*

Cost versus Price

How the concept of cost transparency is critical

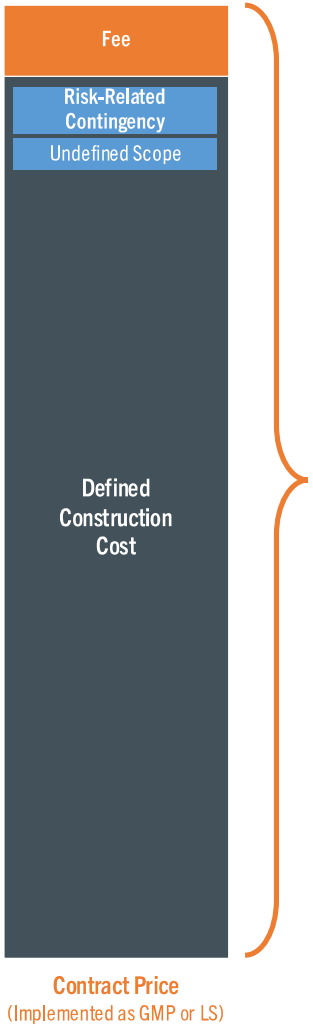


Through the Contract Price Milestone: All Open Book, Fully Transparent



Cost versus Price

How the concept of cost transparency is critical



Fee

- Should have been established in advance (as part of original proposal, or negotiated as part of initial contract)
- The "rules" for calculation and to what costs fees apply should have been established as part of the contract
- Should convert % to a fixed-dollar amount (typical)

Implementation Method?

Guaranteed Maximum Price

or

Lump Sum

Cost versus Price

Construction Phase: Open Book, Fully Transparent

As Delivered: **OVER budget**

OVERRUN is 100% responsibility of CMAR or design-builder

As Delivered: **UNDER budget**

UNDERRUN belongs to owner

By pre-arrangement, savings *may* be shared

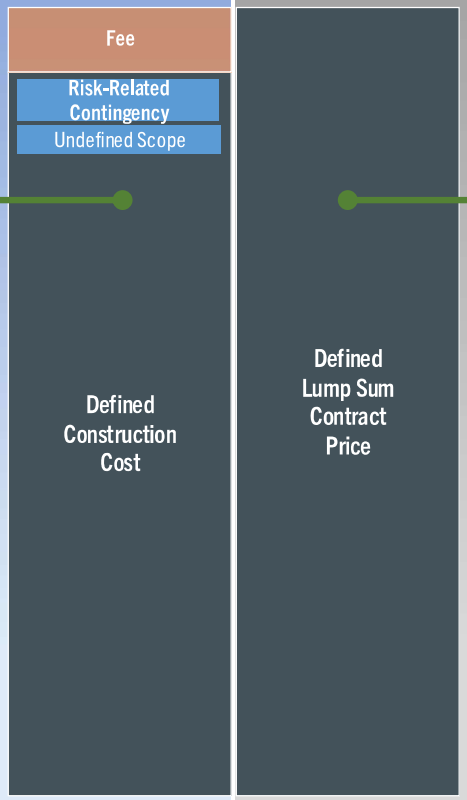
(e.g., 50%/50% or 60%/40%)

Requires documentation and accounting of *all* costs incurred during the Construction Phase

Payments based on documented progress in combination with actual spend

Shared savings, if any, are calculated *in aggregate* at the end of the project

Guaranteed Maximum Price (GMP)



Construction Phase: Closed Book, "Black Box"

As Delivered: **OVER budget**

OVERRUN is 100% responsibility of CMAR or design-builder

As Delivered: **UNDER budget**

UNDERRUN belongs solely to CMAR | design-builder

Does NOT require documentation and accounting of costs incurred during the Construction Phase (possible exceptions to support funding agency requirements)

Payments based on documented progress/milestones

Cost over/underruns are not disclosed to owner (similar to DBB and FPDB)

Lump Sum (LS)

Cost versus Price

Construction Phase: Open Book, Fully Transparent

As Delivered: **OVER budget**

OVERRUN is 100% responsibility of CMAR or PDB

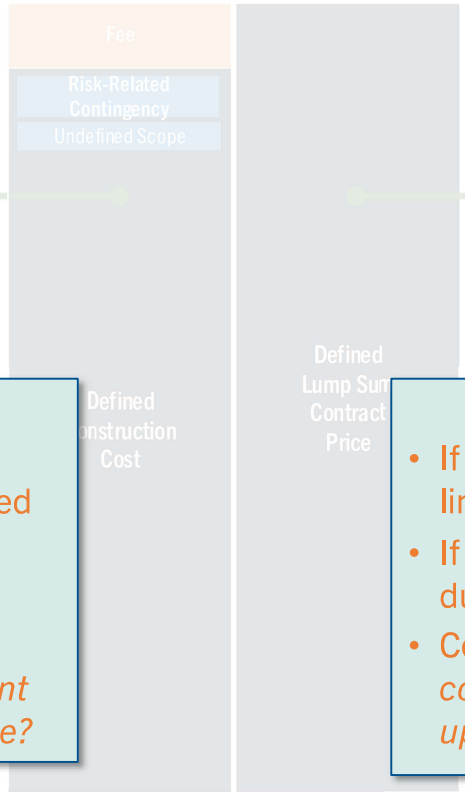
As Delivered: **UNDER budget**

UNDERRUN belongs to owner (may be shared)

When to Consider GMP

- If contingency/uncertainty is high and there is a high likelihood of leftover funds (and a good shared savings clause)
- If the administrative effort of actual cost tracking during delivery is manageable
- Consider: *Is there is a high probability of significant design evolution after the Contract Price milestone?*

Guaranteed Maximum Price (GMP)



Construction Phase: Closed Book, "Black Box"

As Delivered: **OVER budget**

OVERRUN is 100% responsibility of CMAR or PDB

As Delivered: **UNDER budget**

UNDERRUN belongs solely to CMAR or PDB

When to Consider LS

- If contingency/uncertainty is low and there is a limited likelihood of leftover funds
- If the administrative effort of actual cost tracking during delivery is a burden
- Consider: *is the CMAR | PDB willing to reduce its cost/fee in exchange for reduced admin burden and upside potential to retain unspent cost?*

Lump Sum (LS)

Commercial Concepts: CMAR | PDB Shared Savings

Key Commercial Concepts

- Definition of Cost/Cost of Work
- Open Book
- Price
  - Preconstruction Services
  - Construction Fee
- **Shared Savings**
- Incentives

- Applies to "open book" approaches.
- Accommodates the potential for actual cost to be ***less*** than estimated cost (an ***underrun***).
- The Contract sets a ratio to ***share*** any ***underrun*** between the Owner and CMAR/Design-Builder.
- Shared savings can be reimbursed or used for additional scope.

PROS

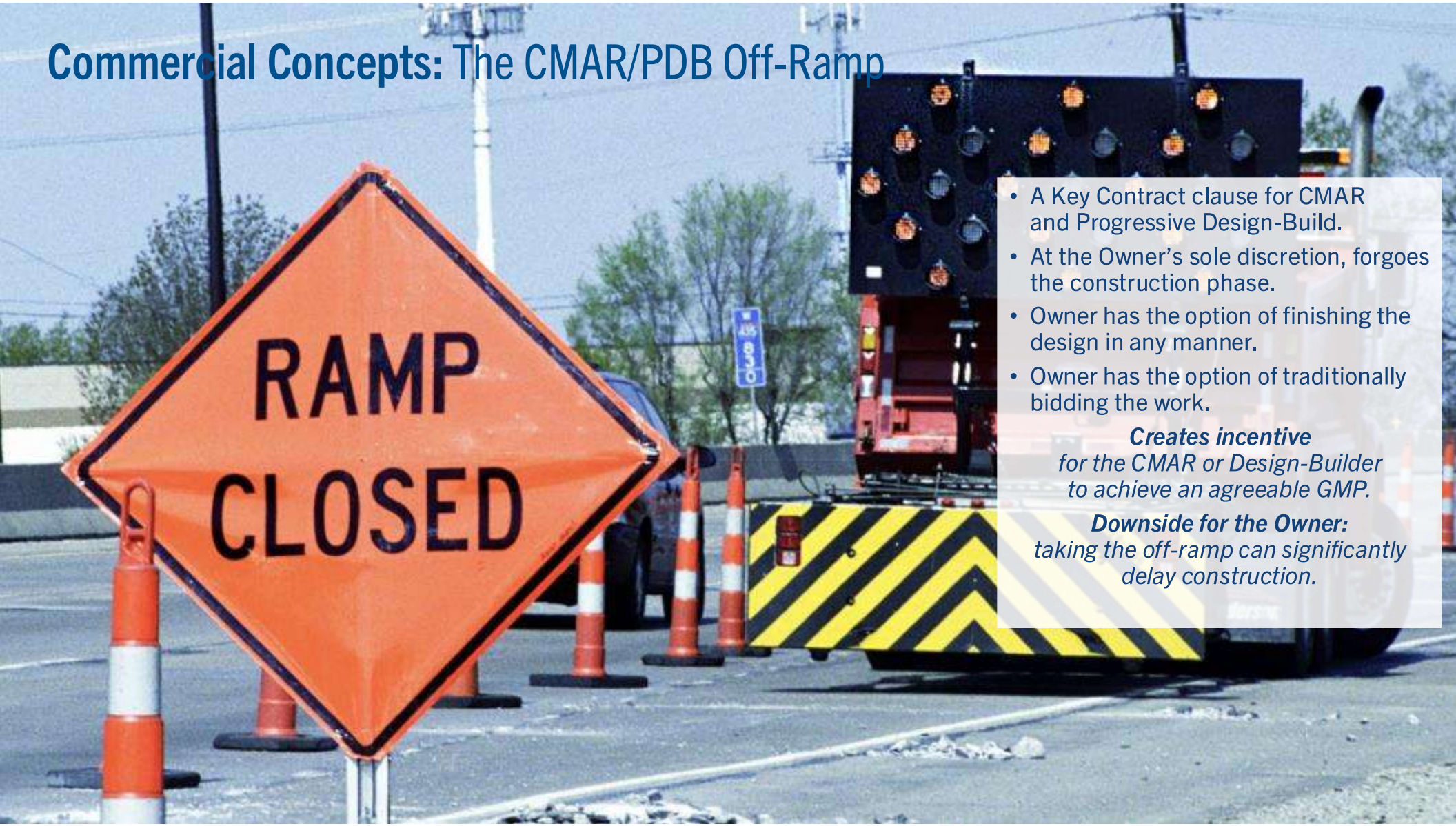
- Incentivizes continued efficiency and VE *after* agreement on the price.
- Provides flexibility to add back desired scope that may have been removed to achieve price.
- Supports collaborative decision-making.

CONS

- "If that price was so darn good, why should we have anything left over?"
- "Any savings should accrue to the public owner and ratepayers without sharing."
- "Efficiency should accrue to the Contractor – use Lump Sum."

Shared Savings Versus Additional Scope. Instead of sharing savings, an owner may decide to use savings from the contract to add back desired scope that may have been removed to meet the initial project budget. While the owner may believe this favors the collaborative delivery firm, it can actually be a disincentive. If the collaborative delivery firm cannot expect to share in project savings, it will be less inclined to find those savings. However, if the contract stipulates that the collaborative delivery firm will share in a percentage of the savings **and** the owner will use **its** share of the savings to add back scope, then this approach becomes more of a win-win for the owner and collaborative delivery firm.

Commercial Concepts: The CMAR/PDB Off-Ramp



- A Key Contract clause for CMAR and Progressive Design-Build.
- At the Owner's sole discretion, forgoes the construction phase.
- Owner has the option of finishing the design in any manner.
- Owner has the option of traditionally bidding the work.

Creates incentive
for the CMAR or Design-Builder to achieve an agreeable GMP.

Downside for the Owner:
taking the off-ramp can significantly delay construction.

Welcome to the Water Collaborative Delivery Association

Fundamentals of Collaborative Delivery Education

Based on the WCDA *Water and Wastewater Collaborative Delivery Handbook, 6th Edition*

watercollaborativedelivery.org

Water Collaborative Delivery Association
Better Projects, Together.

Fundamentals of **Progressive Design-Build**

Introductions: **Who We Are**

Chapter 2: **Making Sense of Collaborative Delivery Options**
PDB Common Terminology

Chapter 3: **Allocating Risks Beyond Standard of Care**
PDB Performance Requirements and Guarantees

Chapter 4: **Understanding Contracts**
PDB Unique Contractual Concepts
PDB GMP and LS Contract Price Implementation

We Are Here Wrap Up: **Questions**

Thank You

Water Collaborative Delivery Association

Better Projects, Together.