

Member Communication Experience

Why Infrastructure Project Delivery Is Evolving

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Matching Integrated Delivery Strategies to the Complexity of Modern Capital Programs

For decades, Design-Bid-Build has served as the foundation of infrastructure project delivery. Its process is logical, structured, and well understood: define the scope, complete the design, competitively bid the work, and then construct the project. For many transportation and public infrastructure projects, it remains an effective and appropriate delivery method.

Yet across the transportation and infrastructure industry, owners are increasingly utilizing Design-Build, Progressive Design-Build, Construction Manager at-risk (CMAR), Construction Manager/General Contractor (CM/GC), and other integrated delivery strategies to deliver increasingly complex capital programs.

WHY?

Much of the discussion focuses on comparing procurement methods and debating the strengths and weaknesses of one delivery model over another. While those conversations have value, they often overlook a more fundamental question.

Infrastructure project delivery is not evolving because traditional delivery methods have failed. It is evolving because the projects themselves have changed.

Today's transportation and infrastructure programs bear little resemblance to those delivered a generation ago.

Public owners are managing projects within active operating environments while balancing aging infrastructure, constrained rights-of-way, utility conflicts, environmental commitments, stakeholder expectations, funding limitations, market volatility, supply chain uncertainty, advancing technology, and increasing public scrutiny. These challenges rarely exist independently. They interact, overlap, and evolve throughout project development.

Projects are no longer simply becoming larger. They are becoming significantly more complex. As complexity increases, uncertainty becomes a defining characteristic rather than an exception. That uncertainty is reshaping how owners evaluate risk, allocate responsibility, and ultimately make decisions. The evolution occurring across the industry is not simply about contracts. It is about decision-making.

A DIFFERENT OBJECTIVE

Historically, project delivery sought to reduce as much uncertainty as possible before construction began. Planning and design were intended to define scope, establish costs, identify risks, and produce sufficient documentation so contractors could competitively bid a well-defined project. Construction would then proceed with relatively few unknowns. That philosophy continues to serve many projects well.

However, today's largest transportation and infrastructure programs frequently contain uncertainties that cannot be

fully resolved during design. Existing conditions remain unknown until construction begins. Utility coordination evolves throughout development. Regulatory requirements change. Community priorities shift. Material markets fluctuate. Operational constraints emerge. Technology advances. Funding requirements change.

Many of these uncertainties cannot simply be designed away. Instead, they must be understood, evaluated, managed, and continuously reassessed as the project develops. This represents a fundamental shift in thinking.

Rather than asking how uncertainty can be eliminated before procurement, many owners are now asking a different question:

How do we make better project decisions while uncertainty still exists?

That subtle distinction is driving much of the evolution occurring across the industry today.

INTEGRATED DELIVERY STRATEGIES

For purposes of this discussion, the use of the term Integrated Delivery Strategies describes delivery approaches that intentionally bring owners, designers, constructors, estimators, project controls professionals, operations personnel, and other key stakeholders together earlier in project development to improve decision-making, manage uncertainty, and enhance outcomes.

The common characteristic among these strategies is not the contract. It is the timing of collaboration.

When estimating, constructability, scheduling, operations, maintenance, and risk management become integrated during project development, owners gain access to information that historically may not have been available until much later in the project lifecycle. The result is not perfect certainty. It is better-informed decision-making.

The above figure illustrates this.

DECISION TIMING CHANGES EVERYTHING

One of the greatest realities of infrastructure delivery is that the ability to influence project outcomes is highest during the earliest phases of development. Ironically, this is also when the least amount of information is available.

As projects progress, knowledge increases. Risks become better understood. Designs mature. Unknowns begin to diminish. At the same time, opportunities to significantly influence cost, schedule, scope, and overall project performance steadily decline. By the time construction begins, many of the most consequential decisions have already been made.

Integrated delivery strategies acknowledge this reality. Rather than delaying collaboration until design is substantially complete, they seek to improve the quality of decisions while meaningful options remain available.

Earlier contractor involvement may identify constructability challenges before they require redesign. Continuous estimating provides owners with greater visibility into evolving cost drivers before budgets are exceeded. Integrated scheduling identifies sequencing constraints while alternatives remain feasible. Risk workshops encourage organizations to proactively address uncertainty rather than react after issues emerge during construction.

None of these activities eliminate uncertainty. They do however improve an organization's ability to manage it.

THE EVOLVING ROLE OF ESTIMATING AND PROJECT CONTROLS

Perhaps no disciplines have evolved more significantly than estimating and project controls. Historically, estimating focused primarily on determining project cost, while project controls concentrated on monitoring cost and schedule performance after execution began.

Figure 1. The Evolution of Infrastructure Project Delivery

TRADITIONAL DELIVERY		INTEGRATED DELIVERY STRATEGIES
Focus on reducing uncertainty before construction		Focus on managing uncertainty throughout project development
Sequential decision-making		Integrated decision-making
Construction expertise primarily engaged after design		Construction expertise engaged during project development
Cost validation at major design milestones		Continuous cost validation throughout project development
Risk identified as the project progresses		Risk proactively identified, evaluated, and managed early
Disciplines work primarily within functional silos		Cross-functional collaboration informs project decisions
Success measured by project delivery		Success measured by project outcomes and lifecycle value

Figure 1. Infrastructure project delivery is evolving from a sequential process toward integrated decision-making to better manage increasing project complexity and uncertainty.

Today, both disciplines play a far broader role.

Estimating has evolved into a continuous decision-support function that helps owners evaluate alternatives, validate assumptions, understand market conditions, quantify risk, and assess the financial implications of strategic decisions throughout project development.

Likewise, project controls have advanced beyond reporting performance metrics. Modern project controls integrate estimating, scheduling, risk management, constructability, value engineering, and performance analytics to provide decision-makers with timely, actionable information.

The objective is no longer simply reporting where a project stands. It is helping shape where the project is going.

This evolution reflects a broader industry trend. Owners are placing increasing value on disciplines that improve decisions before problems become significantly more difficult, and more expensive, to resolve.

DELIVERY METHODS DO NOT DELIVER PROJECTS

One misconception occasionally encountered within the industry is the belief that selecting a particular delivery method somehow guarantees project success.

It does not.

Projects are not delivered by contracts.

They are delivered by people.

Successful projects result from informed owners, experienced designers, capable constructors, skilled estimators, effective project controls professionals, engaged stakeholders, and leadership teams willing to make difficult decisions with incomplete information.

Delivery strategies simply create the environment in which those decisions occur.

The quality of the contract will never exceed the quality of the decisions made by the people responsible for delivering the project.

LOOKING AHEAD

Design-Bid-Build will continue serving many projects

successfully for years to come. Likewise, integrated delivery strategies will continue expanding where earlier collaboration, shared expertise, and greater flexibility provide measurable value.

This should not be viewed as a competition between procurement methods. Rather, it reflects the continuing evolution of infrastructure project delivery as owners adapt to increasing project complexity and uncertainty.

As transportation and infrastructure programs continue growing in scale and sophistication, successful organizations will spend less time asking which delivery method is best and more time asking which delivery strategy best aligns with project objectives, organizational capabilities, stakeholder expectations, and project risk.

Ultimately, the future of infrastructure project delivery will not be defined by the contracts we write; **it will be defined by the quality of the decisions we make while we still have the opportunity to influence the outcome.** 



About the Author

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