



# Five Common Project Challenges Solved by Design-Build!





## WHEN FAILURE IS NOT AN OPTION...

Design-bid-build delivery is a well-understood method of project execution: the owner outlines the scope of work, the engineer produces the design and the contractor performs construction. It's a safe choice for an ordinary project. But what about your most vital, most complex, most time-critical projects? When your team needs to execute a game-changing and high-stakes effort, it's natural to worry about common project problems that can turn big opportunities into giant headaches. They're all too familiar: constructability problems that create cost or schedule overruns, finger-pointing between designer and contractor about an unexpected issue that forces the owner to adjudicate a dispute outside your core expertise, and, worst of all, construction costs that exceed design expectations and lead to project cancellation.

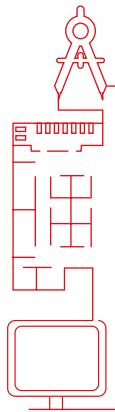
If you are reading this, you already suspect that **design-build (D-B)** has the capacity to solve these problems. While you read this, project teams are working worldwide to build better designs through collaborative project delivery on the most complex and critical projects.

In the following pages, we will identify five problems that plague complex projects and the ways in which design-build teams work together to overcome them. Our evidence is drawn from both CDM Smith's experience in the field and the results of the [2012 Customer Satisfaction Survey](#) of municipal project owners, commissioned by the Water Design-Build Council and carried out by researchers at the University of Nevada, Las Vegas.

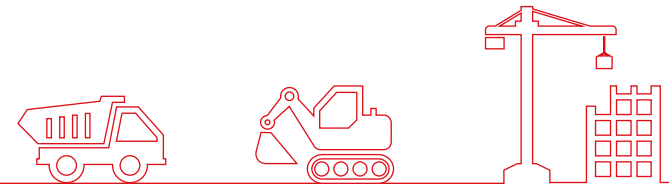
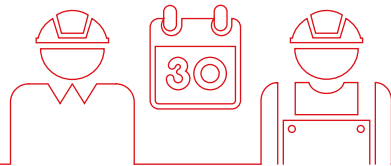
For your most critical projects, there is a better way to ensure winning results for your team and your stakeholders. If you have any questions or want to learn more, [contact us](#).



**THE CHALLENGE:**  
Constructability or schedule issues arise during the construction phase, creating cost or schedule overruns.



**DESIGN-BUILD SOLVES IT:**  
Mutually incentivized to find win-win solutions, the designer and constructor work closely and innovatively during the design phase to anticipate and resolve constructability and schedule issues **before** they arise.



As CDM Smith's integrated team developed the design for the advanced water treatment facility at [Marine Corps Base Camp Pendleton](#) (California), engineers and constructors identified that an existing 3-million-gallon reservoir could be re-used, avoiding the need for new reservoir design and construction, and delivering significant cost savings to the project.



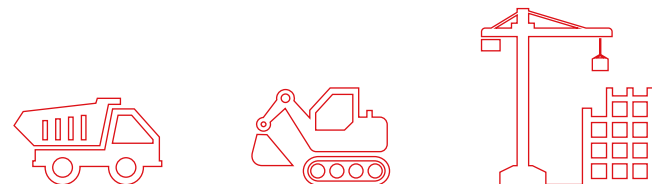
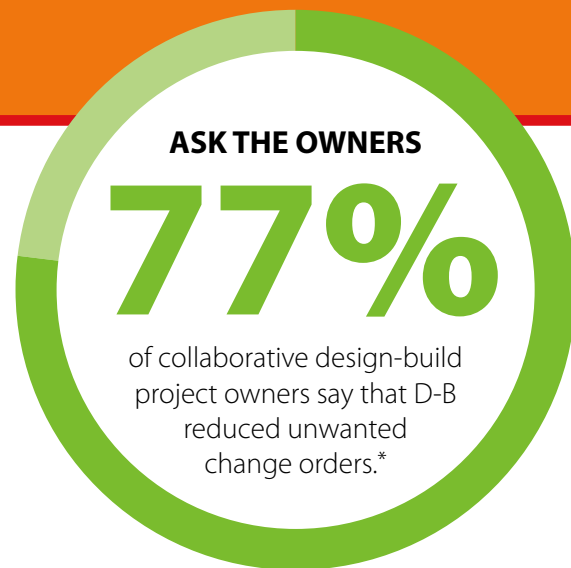
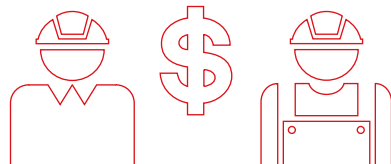
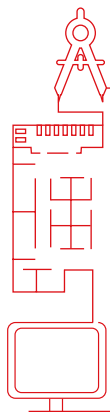
# 2

## THE CHALLENGE:

When bids are received, the construction cost turns out to significantly exceed expectations, imperiling the project.

## DESIGN-BUILD SOLVES IT:

The constructor is involved in the design process and helps identify cost issues as design progresses. Total project costs are then mutually agreed upon at the 60-80 percent design stage by the designer, constructor and owner.



For the design-build [Delta Water Supply](#) water treatment plant and pipelines project in Stockton (California), CDM Smith worked closely with the city to develop design specifications. Because of this early collaboration, the city was able to understand the price proposal in detail, which gave the City Council confidence to stay with CDM Smith beyond the 65 percent design and into the construction phase.





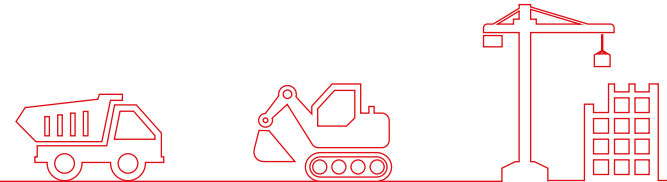
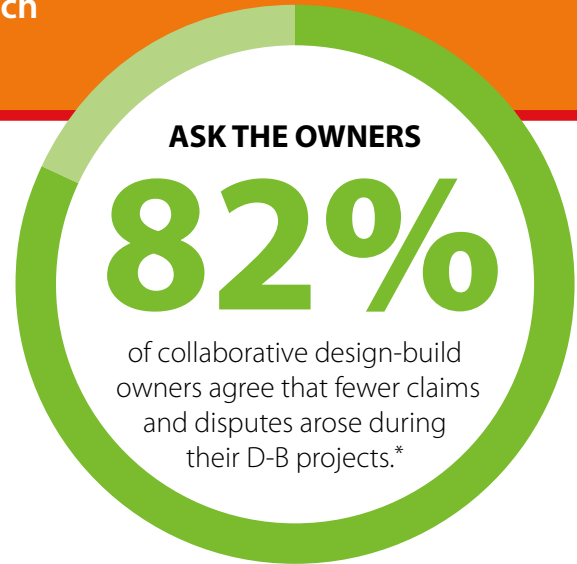
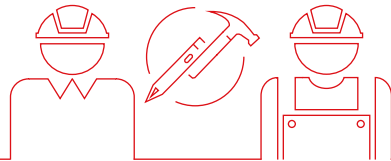
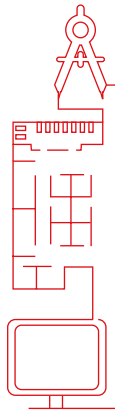
# 3

## THE CHALLENGE:

A serious problem arises when construction is well underway. The designer and contractor each point at the other as the cause.

## DESIGN-BUILD SOLVES IT:

A single point of accountability—the integrated team—helps the owner resolve any issues that may arise, since the design-builder will have sole responsibility.



Johnson Controls Inc. selected design-build delivery for an [industrial wastewater treatment facility](#) that was part of a battery recycling plant. The WWTF was vital to the successful operation of the overall plant, and time was of the essence. Although significant scope changes and tricky technical problems arose as the project proceeded, the collaborative team of owner, designer and builder worked together to overcome them and deliver the project on time for successful startup and operation.



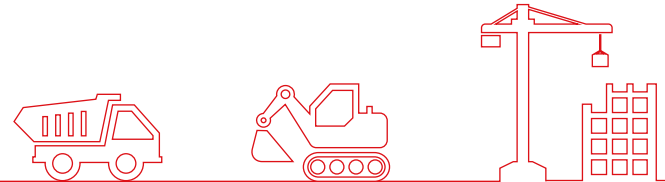
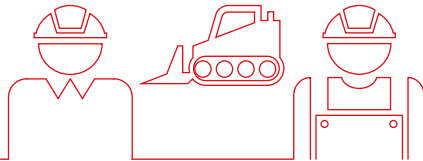
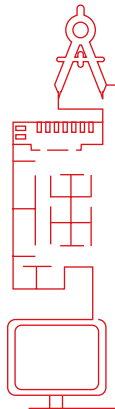
# 4

## THE CHALLENGE:

Until the design is fully completed, reviewed and accepted, procurement cannot begin. Delays and increased costs arise when design development takes longer than expected.

## DESIGN-BUILD SOLVES IT:

Since the contractor is part of the design team from the beginning of the project, major equipment procurement and initial construction tasks can be jump-started during the design phase.



Overlapping design and construction to shorten overall project delivery was key to the successful execution of the Station Houston (Texas) design-build project that CDM Smith performed for the U.S. Coast Guard.

The project was executed with an 18-month turnkey effort from initiation to completion.



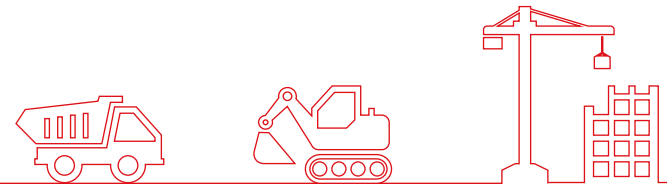
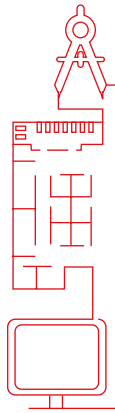
# 5

## THE CHALLENGE:

Cheap hard bid pricing appears to offer the best value, but the owner has difficulty maintaining cost and schedule expectations once the project is underway.

## DESIGN-BUILD SOLVES IT:

Early procurement, compressed schedules, integration of the design and construction teams, and reduced overhead improve constructability and quality while also achieving time and cost savings.



As part of a design-build team for the delivery of a mass burn waste-to-energy facility in [West Palm Beach](#) (Florida), CDM Smith's construction staff have been deeply involved in the design phase, working on aspects of the project such as roadways, drainage, utilities and landscaping. CDM Smith is also designing and constructing several buildings on site, working in close coordination with the other firms and the owner's representatives.



For more information about CDM Smith's design-build capabilities, contact:

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## RESOURCES:

[The Municipal Water and Wastewater Design-Build Handbook](#): A comprehensive resource from the Water Design-Build Council on all aspects of design-build. Essential for owners of water/wastewater projects, but informative for anyone interested in design-build.

[Innovation in Alternative Delivery](#) and [Alternative Delivery Success Stories](#): 1-hour CDM Smith webinars highlighting best practices for alternative delivery projects and the keys to successful implementation of design-build delivery of critical projects.

[Building Better Designs](#): CDM Smith's website that showcases insights from our thought leaders, solutions for our clients and upcoming events.

[@AltDelivery](#): Our dedicated alternative delivery Twitter handle; follow us for industry news, insights, design-build facts and more.

[Design-Build-Blog](#): The Design-Build Institute of America's blog about all things design-build.

\* *The 2012 Customer Satisfaction Survey About Design-Build Projects*  
Shrestha, Pramen and Jacimaria Batista, Department of Civil Engineering and Construction, University of Nevada, Las Vegas  
<http://info.waterdesignbuild.com/2012-municipal-owners-customer-satisfaction-survey>