



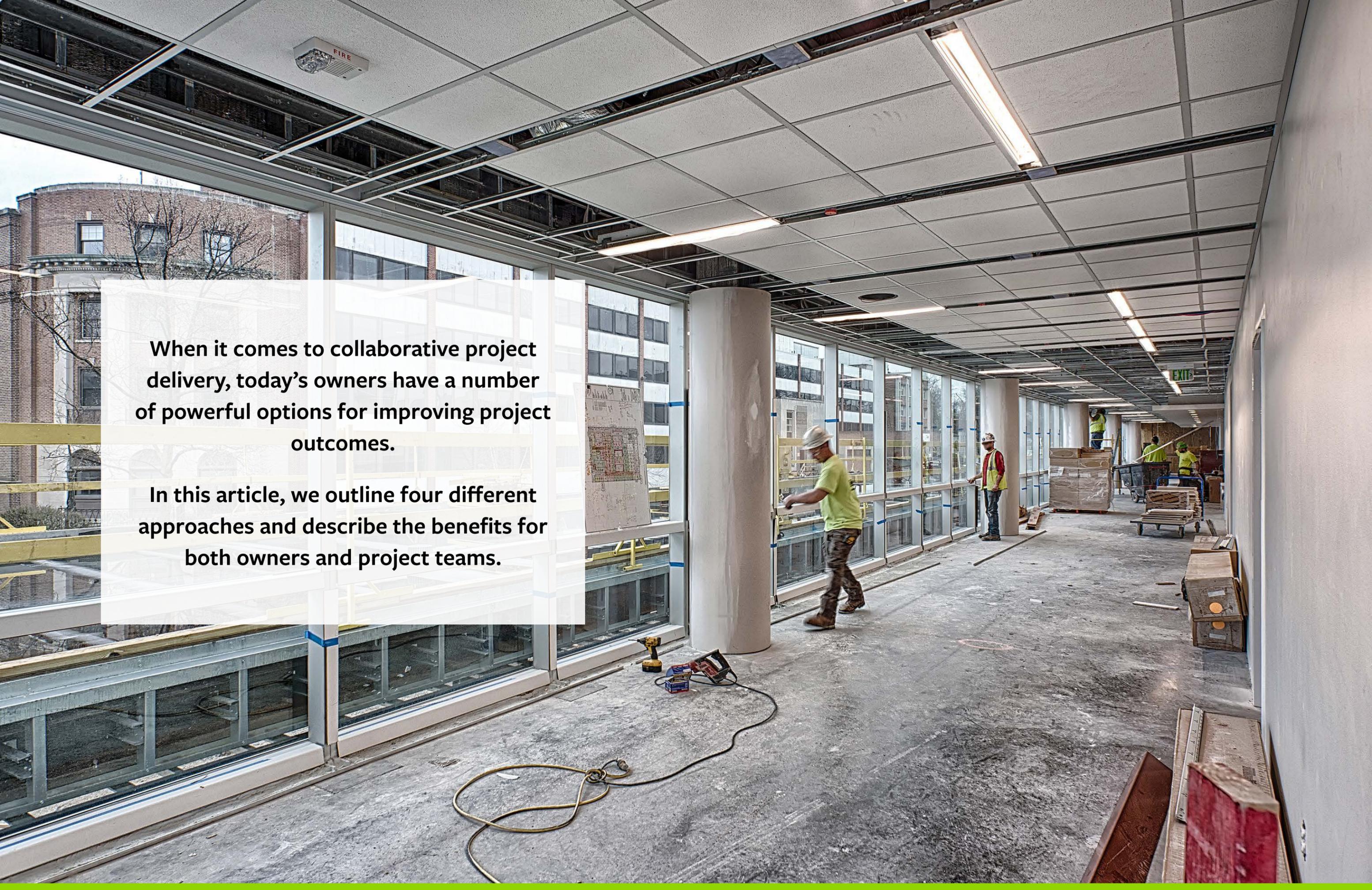
Karpinski

4 Powerful Approaches to Collaborative Project Delivery

How Integrated Project Delivery, Lean, design-assist,
and design-build tap into teams' collaborative capabilities.

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A wide-angle photograph of a modern building's interior during construction. The space is dominated by a long, glass-enclosed walkway or balcony area. The ceiling is a complex grid of metal beams with recessed lighting fixtures. The floor is concrete and appears to be in the process of being finished. Several construction workers in high-visibility vests and hard hats are visible, some standing near the glass railings and others further down the hallway. Construction materials, including boxes and pallets, are scattered on the floor. A large white pillar stands in the middle of the walkway. In the background, a brick building is visible through the glass walls. A fire alarm pull station is mounted on the ceiling in the upper left corner. An exit sign is visible in the distance on the right side of the hallway.

When it comes to collaborative project delivery, today's owners have a number of powerful options for improving project outcomes.

In this article, we outline four different approaches and describe the benefits for both owners and project teams.



Integrated Project Delivery

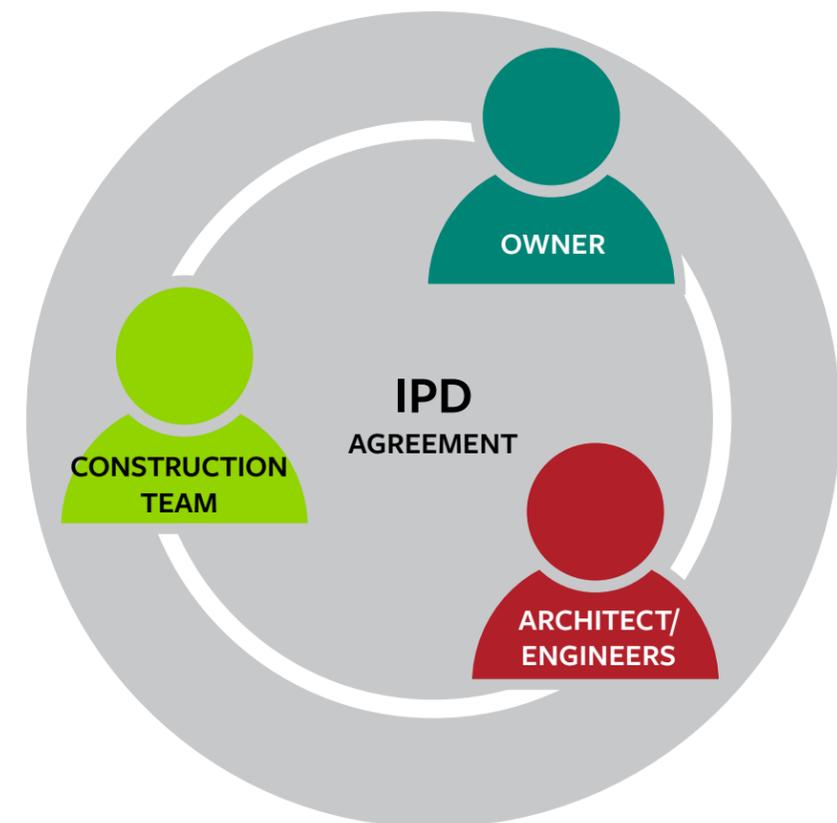
IPD is the most collaborative of project delivery methods, structured to add value to projects. Three key characteristics define IPD: contract, process, and culture.

DISTINCTIVE CONTRACT

With IPD, key project stakeholders (such as the architect, engineers, and contractors) have a single agreement with the owner.

As part of the agreement, they put their profit at risk, contingent upon meeting certain project goals. They also have the opportunity to earn incentives, which are performance-based and usually tied to quantifiable metrics. With an IPD contract, the team has skin in the game. That alone can motivate a team to higher levels of behavior.

Additionally, unlike typical contracts, which basically list deliverables and ways to work out disputes, an IPD contract discusses team structure, behaviors, and design processes.



PROCESS

Successful IPD projects incorporate both Lean and design-assist. As noted previously, design tools are embodied in the contract.

CULTURE

The IPD culture is collaborative. Team members come out of their traditional silos. They are on a level playing field, where cross-discipline contributions are welcome and important (for example, the electrical contractor may have knowledge that adds value to the architect's work on the floor plan). They learn about their team members' work and business. The process can foster empathy among team members.

The owner plays an important role in helping to create a "one team" culture. If they're not truly on board with IPD, the rest of the team may struggle to work as a unit.



I originally believed I didn't need a contract to enforce my behavior. Team-oriented people should be well suited to our industry to begin with.

As I experienced the IPD (ConsensusDocs) agreement, I found out how complementary it is to teaming and Lean.

Since we designers are mostly "process driven," the processes in the contract (whether related to behaviors or design) support the team approach.

– Rocco Gallo



Lean

Lean is a methodology and a mindset, rather than a delivery method. It comes to the design and construction industry from the manufacturing industry.

TEAMS USE LEAN TO ADD VALUE TO PROJECTS

With Lean, teams add value to projects by increasing efficiency and by decreasing waste.

They use Lean tools and processes to improve decision-making, share knowledge, and streamline design and construction. They adopt a Lean mindset of continuous improvement, consistently looking for ways to deliver greater value.

Lean is inherently team-oriented. Successful implementation depends on the contributions of all stakeholders.

Lean isn't limited to IPD projects. You can apply Lean to more traditionally-delivered projects, as well as within offices, departments, or teams.

6 PILLARS OF LEAN

The Lean Construction Institute (LCI) identifies 6 tenets of Lean:

- Optimize the whole
- Removal of waste
- Focus on process and flow
- Generation of value
- Continuous improvement
- Respect for people

LCI places “respect for people” at the center of its model for Lean construction, considering it essential to Lean thinking.

(Source: <https://www.leanconstruction.org/about-us/lci-tenets/>)

COMMON LEAN TOOLS

When using Lean, these are some common tools teams might leverage:

- Choosing by Advantages
- A3 decision-making
- Target value delivery
- Milestone planning
- Phase/pull planning
- Gemba walks
- 5 Whys

Team members at a pull-planning session.





Design-Assist

Design-assist is a tool rather than a delivery method. The goal of design-assist is to reduce project risks and improve overall project quality.

LEVERAGE THE RIGHT EXPERTISE AT THE RIGHT TIME

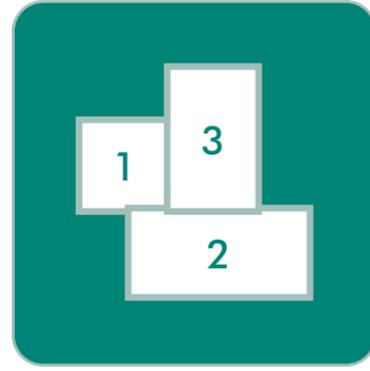
With design-assist, trade partners join the team while design is underway, rather than after bidding (as with traditional delivery methods). As a result, designers and contractors have early access to each other's expertise.

The design team does the work they have always done: Field surveys, design concepts, calculations, system selections, building design. The construction team contributes their expertise during the design process. They provide input on site conditions, constructability, means and methods of installation, and cost.

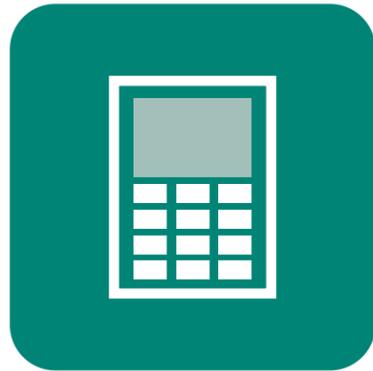
Together, designers and contractors work toward a final product that meets the owner's objectives. Their back-and-forth collaboration helps them to optimize the both design itself and the construction process.



**VERIFY EXISTING
CONDITIONS**



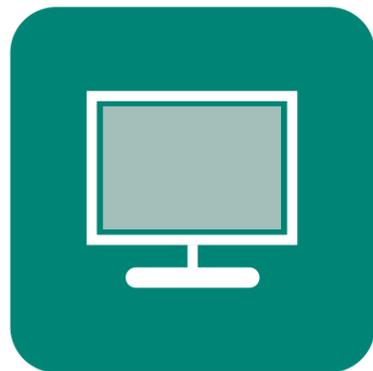
**REVIEW PHASING &
CONSTRUCTABILITY**



**REAL TIME
COST ESTIMATING**



**MAJOR EQUIPMENT
EARLY ACQUISITION**



**BIM
COORDINATION**



**VALUE ADDED
RECOMMENDATIONS**

DESIGN-ASSIST TEAMS ACTIVELY REDUCE PROJECT RISKS

Together, the team can reduce risks related to:

- Budget & scope
- Schedule
- Errors & omissions
- Existing conditions
- Combative project environment
- Profitability

Owners can use design-assist, in varying degrees, with both traditional (e.g., design-bid-build) and collaborative delivery methods.

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both traditional (e.g., design-bid-build)
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Examples of value-add opportunities when teams use design-assist.



Design-Build

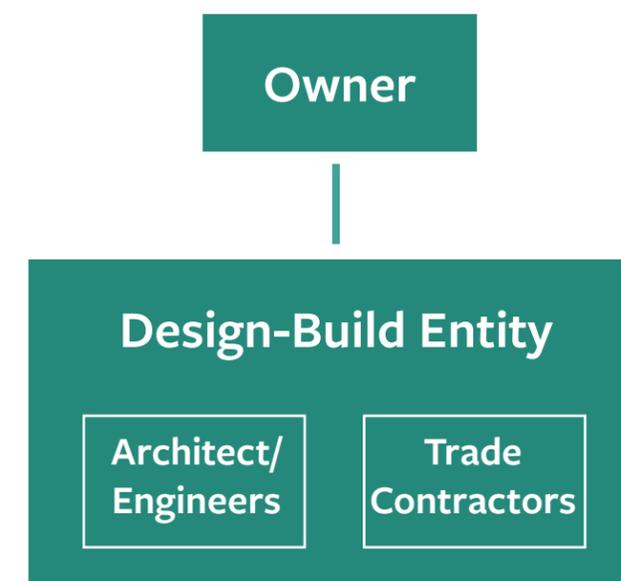
Because of its contract structure, design-build can be used for highly collaborative project delivery.

USING DESIGN-BUILD TO DO MORE

As a delivery method, design-build has a reputation for fast and inexpensive. An owner hires a design-build firm to complete a defined scope of work and specified performance standards. The owner gives up a certain amount of control over the project for the efficiencies of the design-build method.

Contractually, design-build gives the owner a single point of responsibility: The design-build firm holds a contract with the owner, and then the other project partners are contracted under the design-build firm. Below is an illustration of one form design-build can take.

Design-build provides opportunities for schedule and cost efficiencies, such as through early equipment acquisition and the lack of a bid period. Plus, with contractors on board early, they are much more in tune with the design.



One way a design-build contract can be structured.

A PATH TO HIGHLY-COLLABORATIVE PROJECT DELIVERY

Because its contract structure brings designers and contractors under one agreement, design-build can be a path to highly-collaborative project delivery. Design-build is also a good candidate for design-assist, because the design-build firm already has the relevant project partners (designers and contractors) on board.

Design-build can work to the advantage of owners who want a collaborative delivery process, but don't have the time or resources to implement IPD or even CMR with design-assist. By using design-build, an owner can minimize their hands-on effort and still foster a collaborative process among the construction manager, design team, and trade contractors.

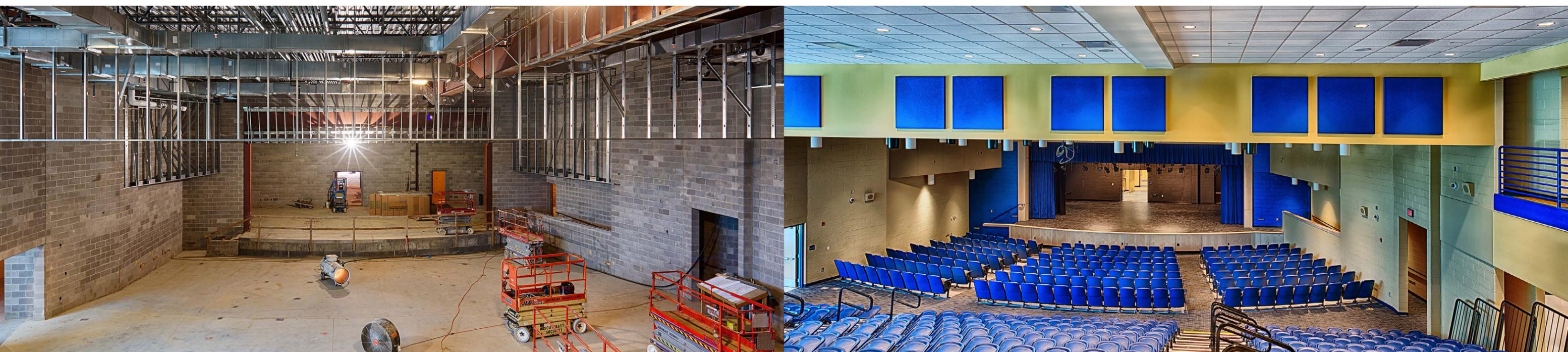
CONCLUSION

Each of these approaches has its advantages and challenges. What's true across the board, though, is that collaboration doesn't happen automatically.

In an industry defined by silos, teams need intentional leadership, thoughtful planning, and clear expectations to succeed at collaborative project delivery.

LEARN MORE

Visit karpinskieng.com/insights/4-collaborative-approaches for links to additional resources.



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ABOUT KARPINSKI

Karpinski Engineering is an award-winning, multidisciplinary engineering firm. We partner with clients to design environments that make a positive impact on people and communities.

Karpinski is known for mechanical, electrical, and plumbing engineering, but we are so much more than MEP. Our team provides technology, fire protection, and civil engineering, as well as building performance and commissioning services. We apply our diverse experience to develop effective solutions to our clients' toughest engineering challenges.

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