Almost Half of US Infrastructure Projects will be Design-Build in 2021.

Are you Ready?

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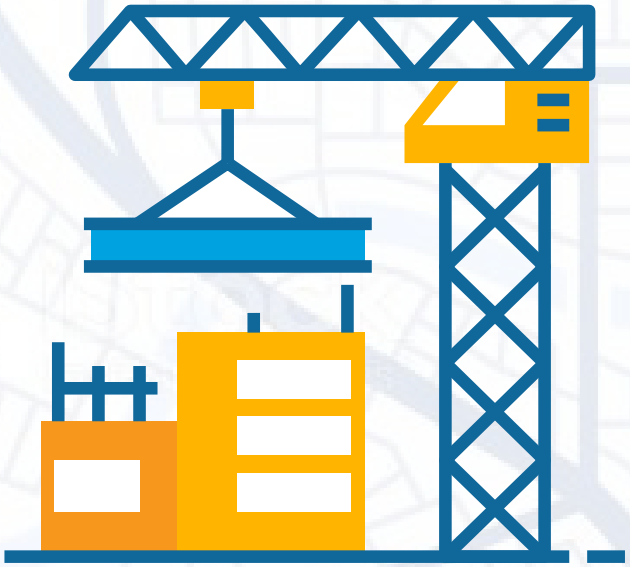

44% of all Infrastructure Projects Expected to be Design-Build in 2021

Design-build project deliveries are expected to encompass over $320B in construction spending in 2021, making up 44% of all infrastructure projects this year.

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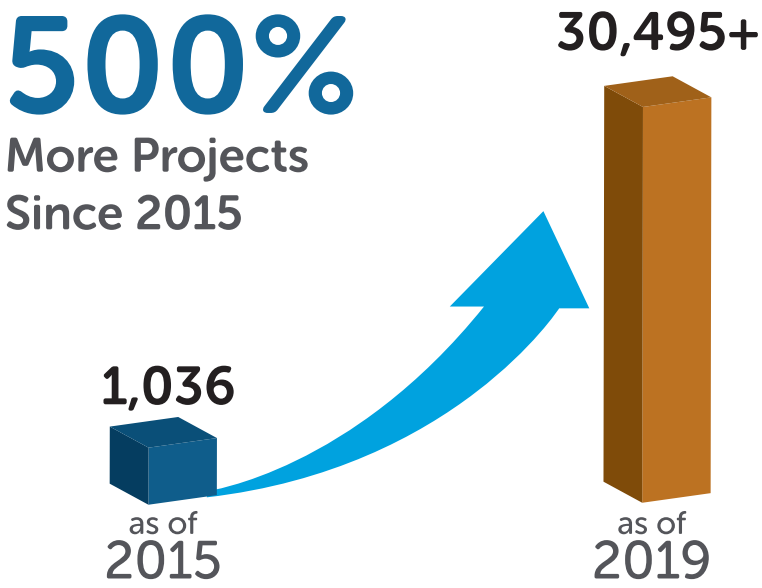
An undeniable shift has been occurring across both the private and public construction industry in recent years, and it isn't going away anytime soon. As owners challenge designers and contractors to come up with innovative solutions to meet increasingly aggressive construction schedules, all while continuing to mitigate project risks and reduce costs, the old way of doing business often won't cut it.

Design-bid-build remains the most widely-used construction delivery method in the United States today, but this is quickly changing as technological innovations allow for faster and more efficient collaboration among project stakeholders. This has led to increased adoption of alternative delivery methods such as design-build, where the contractor and designer work closely together, combining their skill sets and experience to produce fully-optimized designs within short periods of time.

Completed Transportation Design-Build Projects



From 2018 to 2021, design-build construction is projected to grow by 18%, accounting for more than $320 billion in 2021 and representing about 44% of all infrastructure spending this year. Design and construction companies with the flexibility, technology and knowledge to deliver these design-build projects will be positioned for success in this evolving landscape, while those who resist change run the risk of losing out on a large portion of the future construction market.

ARE TRADITIONAL DELIVERY METHODS STILL THE GOLD STANDARD?

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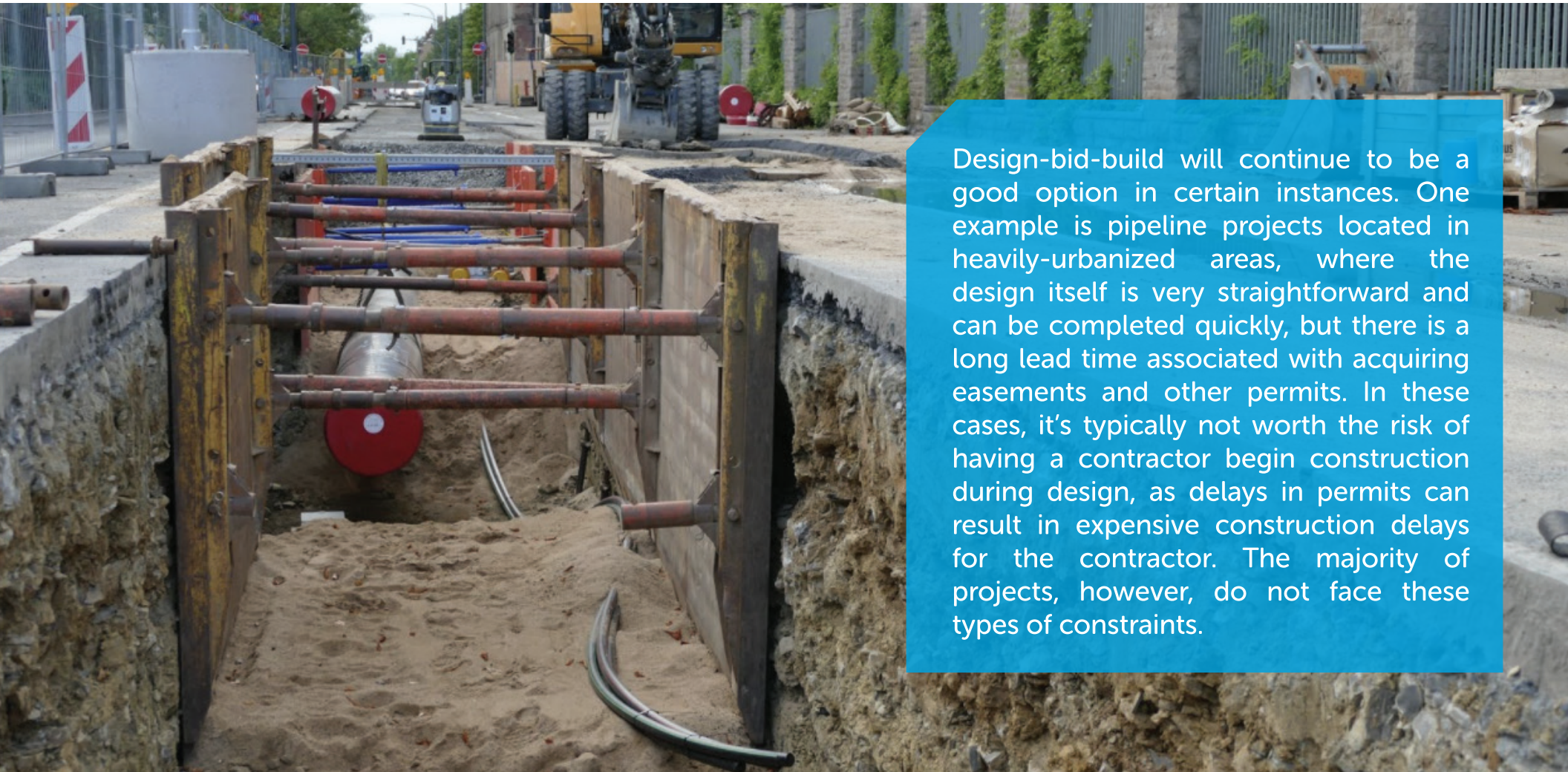
The gold standard for project execution has long been design-bid-build, where the owner first initiates a contract with the architect or engineer to develop construction documents for their project, then bids these construction documents out to contractors. After bid, the owner initiates a separate contract with the lowest (and/or most qualified) bidder and is then responsible for managing separate contracts with the designer and contractor. Once construction starts, the designer will review submittals, provide inspections, answer RFIs, issue change orders and generally make sure the contractor is meeting the intent of the construction documents. In this delivery model, construction can't begin until the design is completed entirely by the engineer or architect.



Design-bid-build will continue to be a good option in certain instances. One example is pipeline projects located in heavily-urbanized areas, where the design itself is very straightforward and can be completed quickly, but there is a long lead time associated with acquiring easements and other permits. In these cases, it's typically not worth the risk of having a contractor begin construction during design, as delays in permits can result in expensive construction delays for the contractor. The majority of projects, however, do not face these types of constraints.

DESIGN-BID-BUILD CHALLENGES

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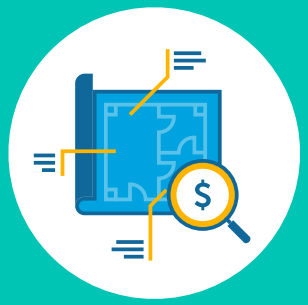
There are several pitfalls associated with design-bid-build which can be avoided with a design-build contract structure.

One of the major downsides is the combative relationship that often develops between the designer and contractor. In order to ensure their companies are profitable on the project, interactions between the designer and contractor are generally very one-sided to avoid taking on any potential liability. This prohibits a natural free flow of ideas between the contractor and designer. Not only does this result in a less than optimal design, it increases the chance that something will go wrong with the project since the engineer, contractor and owner are all operating in separate silos.

An example of how a contractor may defer their risk during construction is by aggressively negotiating a change order for a price above and beyond the actual cost to implement the change. If the designer left something out of the contract documents, or an unexpected condition is encountered in the field, the owner is often at the mercy of the contractor when it comes time to negotiate additional compensation to cover the change. This is especially true if the construction contract is large, and there are few scenarios where it makes more financial sense for the owner to hire a separate contractor to try to reduce the cost of the change. This, in turn, will inevitably cause tension or even litigation between the owner and designer responsible for the error/omission that resulted in a change order.



To prevent this from occurring, the designer spends a significant amount of time and effort during design thinking of every possible scenario that could possibly expose them to liability during construction. This shifting of liability is often the main consideration when developing the contract documents, even more so than the design itself. In many cases, the designer will delegate substantial parts of the design to the contractor, who then must hire a separate design firm to assist with this delegated design, adding more and more layers of complexity and cost to the project.

TRADITIONAL DELIVERY VS. THE DESIGN/BUILD METHOD

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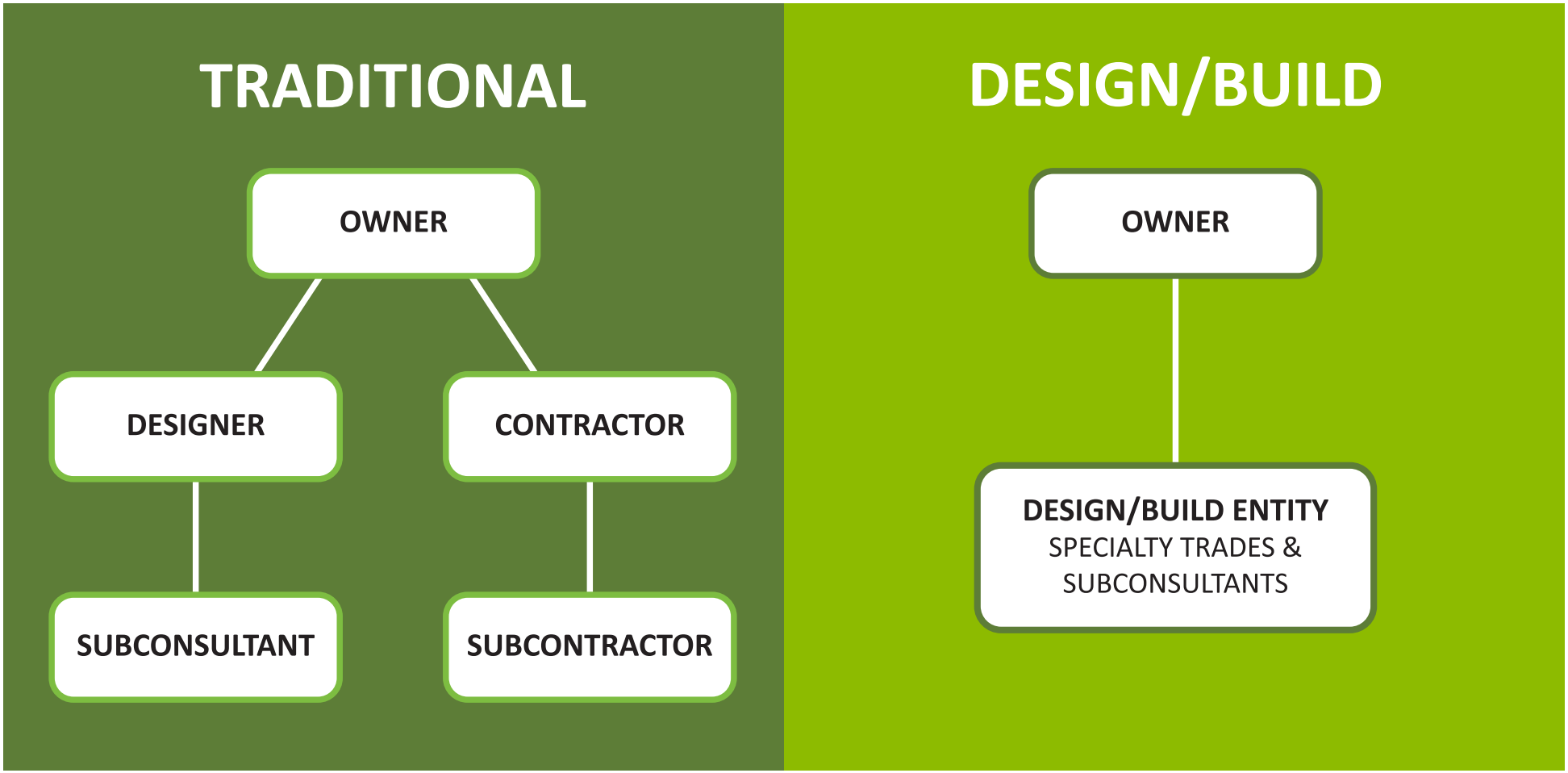
Design-bid-build projects can lead to the contractor and designer blaming each other for construction issues, often resulting in project delays.

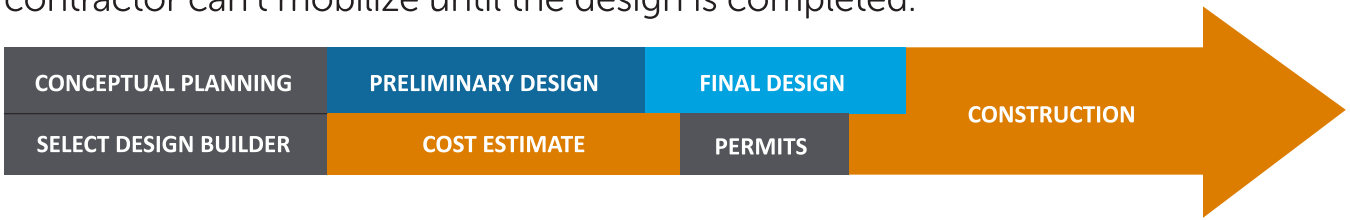
Another major shortfall associated with the design-bid-build model is more obvious to stakeholders – it's slow. Not only is the timeline longer due to the contractor needing to wait for designers to finish a complete set of drawings and specifications before they can bid, decisions during design tend to take much longer because the design milestones can be pushed back without much impact to the overall project budget.



On the other hand, when a contractor is mobilized on-site, there is a sense of urgency that leads to more decisiveness from the design team and owner. Having an accelerated design and construction schedule where decisions are being made efficiently almost always translates to significant cost savings on the project.

DESIGN/BUILD METHOD

Design-bid-build projects tend to take longer to design since the contractor can't mobilize until the design is completed.



TRADITIONAL METHOD

Design-build requires decisiveness from the owner and designer, therefore accelerating the schedule.

DESIGN-BUILD, THE NEW GOLD STANDARD OF CONSTRUCTION?

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A design-build contract structure involves the designer and contractor partnering to create a single, cohesive design and construction team. This allows the owner to manage just one contract and hold only one party accountable, which ultimately minimizes finger-pointing, accelerates the design and construction schedule, and more evenly allocates the risk between the owner, designer and contractor.

One of the most significant benefits of a design-build project is that construction can begin before the design is completed. This can be done by issuing multiple design packages that are at least partially independent of each other. For instance, a jobsite demolition package can be issued while the jobsite design is still underway, allowing the contractor to be prepared to start jobsite work as soon as the jobsite design is completed. The contractor could then begin jobsite work while the design team continues work on the building package. Similarly, procurement packages for major pieces of equipment and materials with long lead times can be issued well in advance to ensure the construction schedule isn't dictated by supplier schedules.

States use design-build for these projects types

Design-build also offers tremendous benefits from a constructability standpoint. While the designer may have great ideas – like which construction methods are suitable for the given soil conditions, which materials will provide the best protection from corrosion, what needs to happen for a structure to be sound, how to develop an aesthetically-pleasing bridge and other technical details – sometimes these designs are less constructible in reality than they appear on paper. During the design-build process, the contractor is constantly weighing-in on the design and can help identify potential issues early in the process, ultimately saving time and re-work. The contractor can also help identify value engineering opportunities based on their experience in the field, further reducing the project cost.

Ultimately, design-build allows the designer and contractor to work as a unified team from the beginning, leveraging each other's unique abilities to determine project recommendations which meet the client's needs, schedule and budget. Changes to the project are discussed and executed as a seamless unit with collaborative problem-solving, resulting in substantially less blame. It's a culture of collaboration over a culture of constant power struggle.

TECHNOLOGY'S ROLE IN DESIGN-BUILD

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In a design-build, the contractor and designer form a single cohesive team which leverages both party's unique experience and skillsets.

With all the clear benefits that design-build offers, it's natural to wonder why it wasn't adopted as the primary project delivery method earlier. In other words, what has changed in the last few years that is driving a massive 18% year-over-year growth in the transportation construction design-build industry?

As is the case in many industries, technology is playing a major role in this shift. Projects are no longer designed by hand at a drafting table, when each design change required going back and erasing the sketches to start from scratch. The rise of 2D software, like AutoCAD, improved design efficiency significantly, but still required considerable re-work when design changes were made. As a result, designs lacked fluidity and had to be well thought-out from beginning to end.

Old methods required that designs be thought-out from the beginning, with little room for change as the design progressed.

Modern technologies have revolutionized the design and construction process to a point where changes can be made in a matter of minutes, with everyone on the project team being updated in real-time. Building information modeling, or BIM, allows designers to model an entire project and create 3D walk-throughs that can be accessed at any time by the owner, contractor or designer.

These 3D models can easily be used to create the drawings, and whenever a design change is made, the model simply needs to be updated to revise the entire drawing set. This technology makes it incredibly easy for contractors and designers to collaborate digitally.

EXPANDED ROLES AND RESPONSIBILITIES

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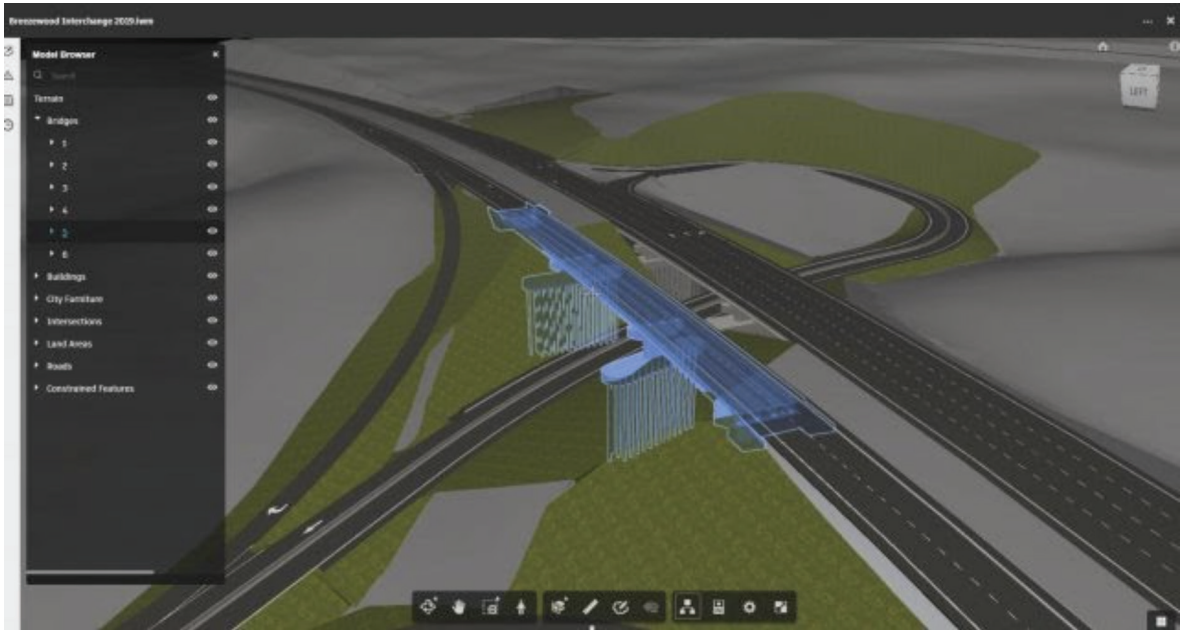
EXPANDED ROLES AND RESPONSIBILITIES

Owners often require consultants to take on Owner Verification (OV) responsibilities to ensure quality standards are being met throughout construction. This is quickly becoming a differentiator when choosing which design-build team will ultimately win the contract, as having robust quality control measures in place becomes even more important during design-build due to the fast pace. As the Owner Verification on a project, it is important that reports are completed accurately and on-time to verify the project is progressing in a way that's satisfactory to the owner. Unfortunately, while many advances have been made in other areas of the design and construction process, there is still a lack of technologies available on the market to accommodate an Owner Verification workflow specific to design-build.



BIM is one of many innovations which have completely changed how the design, engineering and construction teams collaborate.

As a result of this shift to design-build, engineering firms now have new opportunities to expand their service offerings and set themselves apart from the competition by offering solutions that are tailored specifically to this new delivery model.

TECHNOLOGY FOR THE DESIGN-BUILD METHOD

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A recent report from the Federal Highway Association stated that "documented benefits of design-build include faster project delivery, improved constructability, less cost growth, early cost certainty, and fewer claims." With the exciting transition to alternative delivery methods comes the important responsibility of securing the right technology to enable teams to perform the Owner Verification role.

Many teams have found it difficult, if not impossible, to utilize legacy systems traditionally used for design-bid-build contracts on their design-build projects. Most legacy systems lack flexibility and track metrics which are not used for Owner Verification on design-build contracts, such as placed quantities and bid items. In addition, legacy construction management systems can't track projects by schedule items, activity codes or work packages provided to the owner by design-build teams, which are essential for Owner Verification documentation.

The solution is a platform that is flexible enough to capture real-time inspection and verification data for all project delivery types. HeadLight is a leading infrastructure construction innovation with the built-in flexibility to dynamically change the categories in which the collected data is classified, and can meet the specific needs of design-bid-build, design-build, CM/GC or any other alternative delivery type that may become more popular in the future. Owners and construction engineering firms nationwide are choosing this photo-based inspection technology due to its efficiency in gathering high-quality data with less effort, resulting in increased productivity, more comprehensive reports and quicker delivery times from the inspector to the owner and engineering firm teams. This provides a clear line of sight for all project stakeholders, giving the owner peace of mind and setting the engineering firm apart by providing an exceptional product.

As alternative delivery contracting methods grow in popularity and continue to evolve, it's vital that companies choose innovation that will constantly evolve to keep pace. Future-proof your company's innovation toolkit, and you're ensuring you don't get left behind.

HeadLight is a photo-based inspection technology designed to provide high-quality data in real time to all the stakeholders on a project. We believe that in today's world, more data ultimately results in better projects and greater transparency. Find out more about how HeadLight can set your company apart from the competition and meet your Owner Verification needs, regardless of the contracting method that's chosen. **Request a demo** today.