INNOVATION / TECHNOLOGY DEPLOYMENT SUMMARY

Alternative Delivery System (ADS) Decision-Support Tool V2.0

CHALLENGE

In 2011, the 82nd Texas Legislature granted the Texas Department of Transportation (TxDOT) authority to use the Design-Build (DB) transportation project delivery method, an alternative to the Design-Bid-Build (DBB) method already in use. As the state continues to grow rapidly, the need to deliver transportation projects quickly has become more urgent. TxDOT and its regional partners are increasingly considering alternative project delivery methods to keep up with this demand. The Alternative Delivery Division (ALD) identified the need for an effective data-driven method for determining which projects to deliver using the Design-Build process.

Design-Build (DB): DB is an alternative transportation project delivery process that allows design, construction, property acquisition, utility relocation, and sometimes maintenance to occur simultaneously rather than sequentially. The DB contractor who submits the best-value proposal (based on cost, qualifications of firm, and project approach) to design and construct the project is selected.

Design-Bid-Build (DBB): DBB is TxDOT's traditional transportation project delivery method. In this sequential process, engineers first design a transportation project, then the project is awarded to a contractor for construction. The contractor who submits the lowest qualified bid is selected to construct the project.

SOLUTION

TxDOT partnered with The University of Texas at Austin's Center for Transportation Research (CTR) to develop the Alternative Delivery System (ADS) Tool, a Microsoft Excel-based risk assessment tool that provides the information needed to more effectively determine which projects to deliver using the DB rather than the DBB process. Since the ADS Tool's first iteration, released in 2014, TxDOT and its design and construction industry partners have gained valuable insights from direct experience with DB, including a better understanding of its relative risks and benefits. These insights helped evolve TxDOT's programmatic approach to DB and led to the creation of the Alternative Delivery System (ADS) Tool V2.0 in 2020. The new ADS V2.0 Tool combines TxDOT and industry expertise in a more comprehensive, rigorous, and structured decision-support process.

PROACTIVE APPROACH

Prior to developing the ADS V2.0 Tool, TxDOT used a basic approach to identifying extensive, complex projects, and to its decision-making in favor of DB versus DBB. The ADS V2.0 Tool evaluates certain

TxDOT GOALS

- Deliver the right projects
- Focus on the customer
- Foster stewardship
- Optimize system performance
- Preserve our assets
- Promote safety
- Value our employees

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project criteria (such as project complexity, ROW needs, etc.), then formalizes the results in support of a more well-defined, data-driven process for project decision-making. Thus far, the tool has provided an easy-to-use, customized evaluation method, score, and recommendation report for 124 projects (V1.0: 100, V2.0: 24). Nine of the 24 projects evaluated with V2.0 have been delivered or are under consideration for Design-Build delivery.

BENEFITS

The ADS Decision-Support Tool V2.0:

- Provides rigorous, repeatable, and quantifiable data-driven decision-making.
- Evaluates each project's unique characteristics (e.g., innovative opportunities, designer-contractor integration, and schedule savings) and risks (e.g., railroad impacts, required permits, and utility impacts) to help determine the recommended project delivery method.
- Allows for informed decision-making throughout a project's lifecycle.
- Results in a score and a structured recommendation for the selected project delivery method.

KEY TASKS

- For enterprise implementation of the ADS Tool, CTR provided ALD with a user guide and one-on-one training.
- During project selection, ALD facilitated a workshop with district staff familiar with the project details.
- Workshop participants determined the applicability of each unique project characteristic based on project conditions, issues, risk, and challenges.
- Workshop participants determined the relative weight of project goals and select each goal's relative importance for the project.
- The ADS V2.0 Tool considers project goals and characteristics, ranking most- and least-supportive characteristics, to determine the recommended delivery method.

DATA SOURCES

The ADS V2.0 Tool evaluates the construction project's unique characteristics — funding, project readiness, project limits, environmental, right-of-way, etc. — in relation to project goals. This information is collected during a facilitated workshop with the team familiar with the candidate project.

Resources

Texas Department of Transportation (TxDOT) Alternative Delivery System (ADS) Decision-Support Tool V2.0 (utexas.edu)

Alternative Delivery Division (txdot.gov)

Alternative Delivery projects (txdot.gov)

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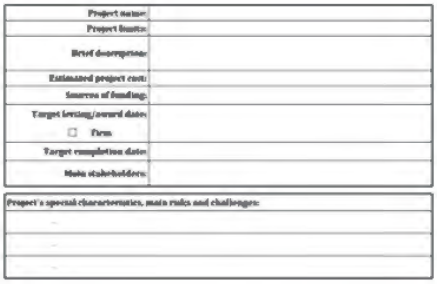
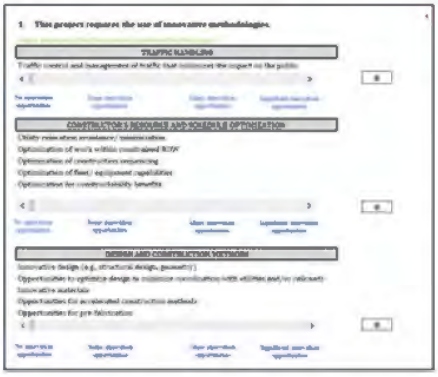
ADDITIONAL INFORMATION

The ADS V2.0 Tool provides transparency and assists TxDOT in selecting which projects to prioritize for Design-Build delivery.

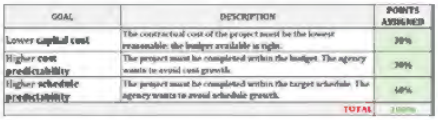


The **Project Information** tab captures basic project information used to create the final report. The information is not used in the analysis of the project.

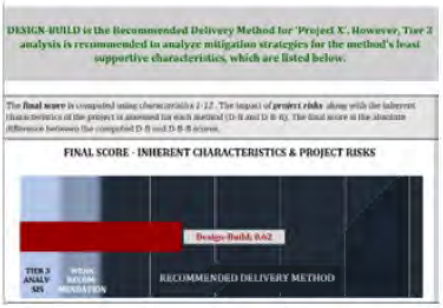


Project Characteristics is the first of two primary input sections in the ADS V2.0 Tool for assessing the applicability of each project characteristic.

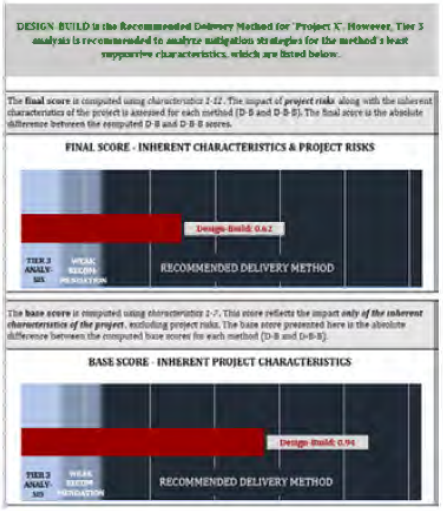
The first two characteristics are shown in the image on the left.



Project Goals is the second input section for reflecting each stated goal's relative importance to the project.



The **Final Output** section shows the recommended delivery method and relative score to indicate the strength of the recommendation.



Base Score