Georgia's Path to Innovation

Alternative Delivery Breathes Life into State Transportation Infrastructure

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The state of Georgia makes significant investments in transportation and infrastructure, but the Georgia Department of Transportation (DOT) does not work alone. With leading academics and expert practitioners joining the effort, the agency's use of alternative delivery transformed the approach to infrastructure improvements statewide. Georgia DOT uses alternative methods to compress and accelerate the delivery of projects from engineering through construction through public–private partnerships (PPPs) and design–build (DB) methods. As with most DOTs, the delivery of capital infrastructure has deployed a prescriptive design–bid–build approach. Alternative delivery generally affords the private sector much more opportunity to engage in the design and innovate in delivery.

Problem

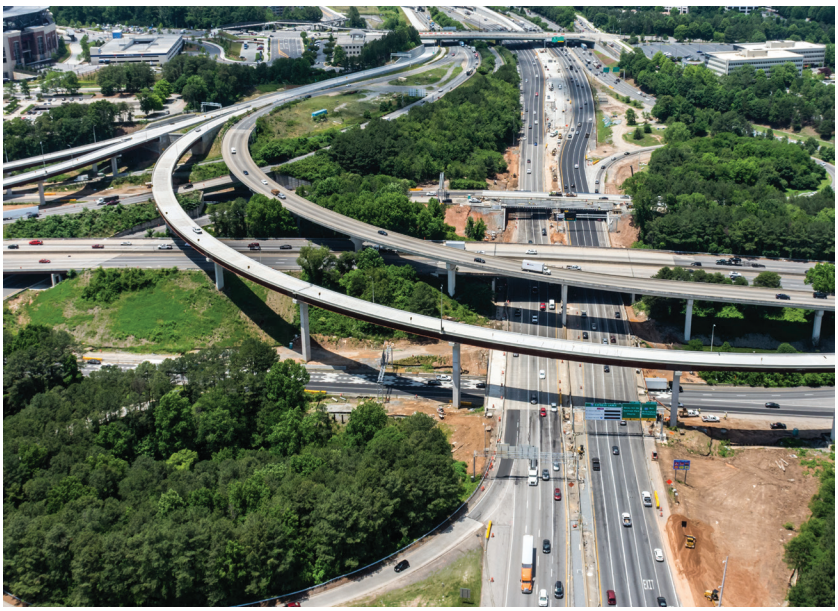
Considering Georgia's population growth and aging infrastructure, new ways were needed to tackle the delivery of transportation projects that would serve the state and its citizens. In 2003 and 2004, Georgia passed key legislation that opened new pathways to infrastructure project delivery.[1] The PPP legislation allowed Georgia DOT to accelerate projects through alternative delivery and private financing. DB legislation allowed partnerships between engineering and contracting firms to take place earlier in the development process.[2] These approaches contrasted sharply with the usual way Georgia DOT functioned, however. With nearly 100 years of infrastructure delivery practices vested in the old way of doing business combined with highly complex, important projects, it was a challenge for the agency to tackle a different approach.

Georgia DOT believed a research-focused approach would determine and document the best way forward. With the high level of interest for Georgia DOT to exercise alternative delivery methods, the agency set out to become more knowledgeable and proficient not just in methods but also in the next generation of best practices in procuring, managing, and delivering some of the most complex projects in its history.

Once Georgia DOT was able to procure PPP and DB contracts, the private sector could compete for a broader array of services, bringing value-added innovations that strategically leveraged available funds in new ways. The new laws also challenged the agency to develop the procedures needed to use these tools.

Although early experimental projects led to some success, Georgia DOT not only wanted to perform one-off efforts but also to strengthen its growing institutional knowledge with research, ensuring long-term delivery reliability within the construction industry. A key factor to success in developing the agency's alternative delivery practices was preserving creditability and competence to procure and manage large-scale projects.

[1] Georgia Code § 32-2-78–80 (2017).



The design–build–finance Northwest Corridor project in metropolitan Atlanta is scheduled to open in late summer 2018.

PHOTO: GEORGIA DOT

Solution

Research

To build institutional knowledge for success, Georgia DOT first reflected on its objectives and considered the knowledge of prevailing trends in the industry, tapping the research community and collaborating with practitioners from Florida, Texas, North Carolina, Virginia, and other states. Georgia DOT researchers also partnered with such experts as Baabak Ashuri of the Georgia Institute of Technology (Georgia Tech), who is known for develop-

[2] Georgia Code § 32-2-81 (2017).

ing best practices in construction. Ashuri conducted research on current and emerging alternative delivery approaches, including a full scale of considerations from project selection to procurement design and execution to effective complex project management.

Georgia DOT used its authority to advance alternative delivery of its program, managing and building on the new knowledge gleaned by experience and insights from multiple DOTs that were leading similar efforts. Along with practicing alternative delivery, a forward-looking Georgia Tech research project helped document best practices. The study gathered knowledge from other states using alternative delivery methods, synthesized the information, and developed tools and procedures to inform good policy and practice.

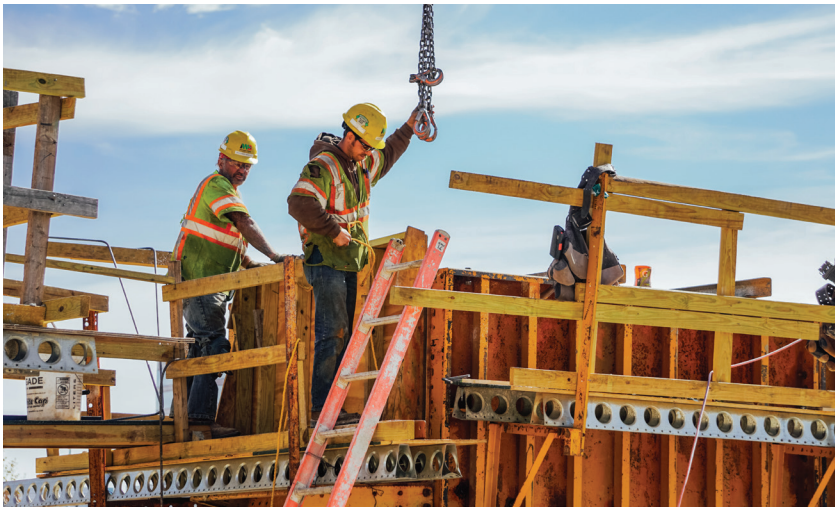


PHOTO: GEORGIA DOT

By facilitating alternative project delivery methods, Georgia DOT hoped to enhance individual projects as well as its body of institutional construction knowledge.

Best Practices

The resulting report, *Recommended Guide for Next Generation of Transportation Design–Build Procurement and Contracting in the State of Georgia,* consolidated and compared practices and identified practical best practices in alternative delivery (*1*). The report helped crystallize the idea that the total project delivery approach—early agency due diligence, procurement method selection, and varied contract management approaches—can save not only time and money, but also can facilitate a competitive environment to help reach agency goals.

One of the most significant findings is the recognition that an objective assessment of the project characteristics must be performed to determine a project's fitness for alternative delivery. This exercise inherently forces the facility owner to decide on the true goals for any given infrastructure project, a step that otherwise takes a back seat to the routine activities required by the bid process.

Another key finding—not unique to this research, but nonetheless important—is that the odds for success are improved by an award process that rewards innovation by considering not only the bid but also the technical merits of the bidder's proposal. Called "best value" in the transportation industry, this is a shift from the customary process of awarding solely on the basis of lowest bid.

In 2013, the *Recommended Guide* was named a Sweet Sixteen high-value research project by the American Association of State Highway and Transportation Officials. A major change to Georgia DOT practices included chartering a specialized unit to house, procure, and manage its alternative delivery program. This allowed the opportunities that only specialized procurement could provide but also allowed the traditional construction bidding process—still a valuable delivery method—to continue.

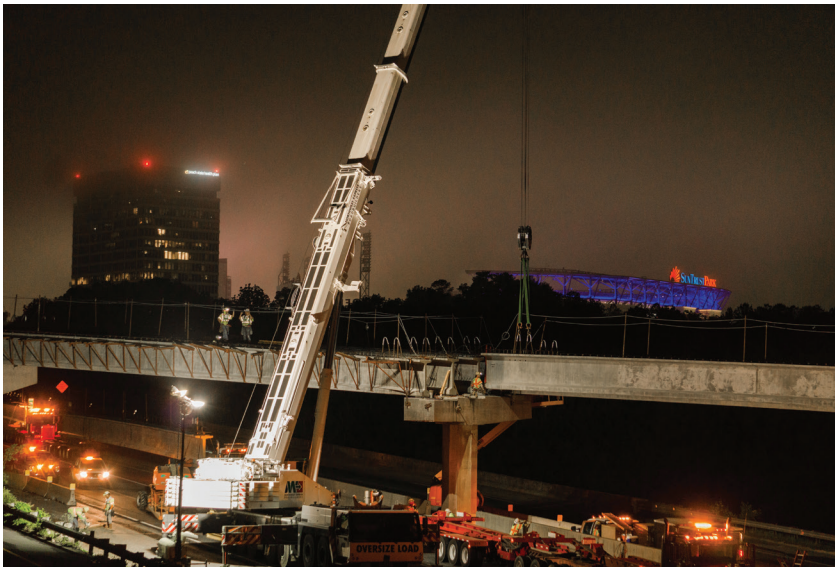
Collaboration

Meanwhile, opportunities arose through the active participation of Georgia DOT representatives in various professional organizations, such as the TRB Standing Committee on Project Delivery Methods and a project oversight panel for the second Strategic Highway Research Program (SHRP 2). By doing this, Georgia DOT researchers were able to collaborate and engage with other practitioners at the national level, bringing value and maturity to Georgia's approach to this delivery method—as well as information to help adapt this approach when there is little practical and formal information to go by. Georgia DOT developed a *Design–Build Manual* to capture this knowledge, and elements of the manual often were employed as a direct result of engagement with lessons learned from other DOTs.

Georgia DOT and others benefited from the connections to the broad network of practitioners with similar duties and perspectives that were provided by TRB, National Cooperative Highway Research Program, and SHRP 2. In 2015, SHRP 2 published *Project Management Strategies for Complex Projects*, which revisited the scope, schedule, and other dimensions of project management and outlined practical strategies, methods, and tools for complex project management (*2*). Georgia DOT adapted information from the guide into its *Design–Build Manual*.

By implementing research products and maintaining a healthy, transparent record of lessons learned from alternative delivery options, Georgia DOT has been able to match best practices to on-the-ground needs. The resources, experience, and the innovation-fostering mindset that these research projects have provided helped to create a knowledge-sharing environment within Georgia DOT, empowering practitioners to apply this knowledge to ever-changing project needs. New methods always

PHOTO: GEORGIA DOT



Georgia DOT selected Northwest Express Roadbuilders from three bidders to deliver the NWC project.

come with challenges, however, such as challenging the way an institution usually works or deploying a new management approach that includes risk and complexity in decision making.

Cost Savings

The Northwest Corridor (NWC) project was awarded as a design–build–finance contract in 2013 and will open this year, and the Transform 285/400 interchange improvement project in metropolitan Atlanta is scheduled for completion in 2020. Both projects are on a path to successful delivery, and through DB, over-the-shoulder plan reviews, and market competition, have produced hundreds of millions of dollars of savings. The NWC project has saved $150 million and the Transform 285/400 project has saved more than $370 million.[3]

A large part of these savings are attributed to alternative technical concepts (ATCs) such as innovative "equal or better" structure techniques to add value and reduce amount of structure-related costs that were otherwise not allowed by the solicitation. By using ATCs, contractors can engage Georgia DOT confidentially before the final bid is due and, through a structured process, can employ creative thinking to help them win the job.

Although the ATC approach is not formalized as a traditional delivery process at Georgia DOT, the influx of innovation via this method adds value to the project delivered and allows the agency to consider implementing innovative ideas in its regular program standards, once the ideas become Georgia DOT property post let. Ultimately, the ATCs become the project—as evidenced by the nearly complete NWC project.

[3] Based on final Georgia DOT DB construction estimates.

Benefits

Armed with lessons learned, a respectable track record, and practical research results, Georgia DOT is turning alternative delivery into a statewide practice, particularly with the new Major Mobility Investment Program (MMIP), which sets aside $11 billion for 11 initial projects statewide to be under contract by 2026.

MMIP is an unprecedented investment in Georgia transportation infrastructure for widening, express lanes, interchanges, and commercial vehicle lanes: four projects will take a DB approach, four projects will be design–build–finance, and three projects will be design–build–finance–operate–maintain. These projects will add more than 300 new lane miles of capacity, improve freight movement, provide operational improvements, enhance safety, and decrease travel time. To deliver this program on schedule and on budget, reliably and credibly, is highly important to Georgia DOT.

The successful use of repeatable best practices gives the agency confidence in delivery of MMIP, which is not achievable on the same accelerated timeline by traditional delivery methods. For example, a one-month delay of MMIP would cost an additional $20–30 million.[4] Traditional delivery also would not be able to foster the necessary innovations for success, such as leveraging resources and financing approaches for large-scale projects.

Borne out of a well-developed initiation period, alternative delivery has become a robust, trend-setting practice at Georgia DOT, beginning with new PPP legislation and continuing through MMIP and beyond. The agency found success by investing in early research, garnering lessons learned, and framing each new partnership as a value-building experience.

Public transportation agencies have an opportunity to bring the innovation and expertise of the private sector into alignment with government objectives. As more departments utilize alternative delivery, DOTs across the nation can benefit from fast, efficient transportation renewal.

[4] MMIP has an assumed 4% annual escalation cost.

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Suggestions for Research Pays Off topics are welcome. Contact Stephen Maher, Transportation Research Board, Keck 486, 500 Fifth Street, NW, Washington, DC 20001; 202-334-2955; smaher@nas.edu.