Expedited Project Delivery

To the resolve: design-build, toll roads, and private sector funding for alternative delivery of transportation projects.

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So much to do, so few resources to do it with. For more than half a century, this dilemma has frustrated state and local transportation agencies in their attempts to keep pace with the demands of an increasingly mobile nation. Even with major infusions of federal funding, from the Interstate Highways Act of the 1950s to the more recent string of Transportation Enhancement Acts (TEAs), the needs have consistently surpassed the dollars available to address them.

Yet every day, more motorists stress an already overburdened network of interstates, arterials, urban streets, and rural highways, all counting on a safe, efficient trip to their destinations.

Many states and localities must prioritize their public financing to deferred maintenance, leaving little or nothing left over for new projects. That means new revenue streams are often the only way to make capacity improvements.

Bridging the Gap

Over the past 15 years, many transportation agencies have successfully bridged some of their funding challenges by taking advantage of three interrelated transportation trends: the advent of design-build and other project delivery systems; renewed interest in toll roads and other pay-to-use facilities; and the involvement of private-sector financing.

Design-build and other alternative project delivery methods are not a funding source but can deliver an early guaranteed price, which provides for a more precise borrowing strategy as well as an expedited completion schedule that opens the revenue stream sooner. The accelerated process also puts the new road or transit system in service sooner, easing problems throughout the region's transportation network and minimizing the amount of time the public is subjected to negotiating through construction zones.

Private-sector involvement has other benefits, particularly for new transportation projects and those that have stalled in the planning stage. That, in turn, has opened the door to allow private-sector

Some projects are ready-made for design build, such as a two-mile widening of Interstate 95 from four lanes to six lanes (three northbound and three southbound). This project also involved the widening of three bridges, drainage, new lighting—including hi mast—upgrades to the ITS system, and reconstruction of 1,000 ft of U.S. 92 under I-95.

entities to augment their design-build services by adding operations, maintenance, and even financing components. Private-sector entities often have more freedom to gather support and move projects forward than public agencies, so a growing number of states now accept unsolicited proposals for toll roads to meet both new and long-term highway needs.

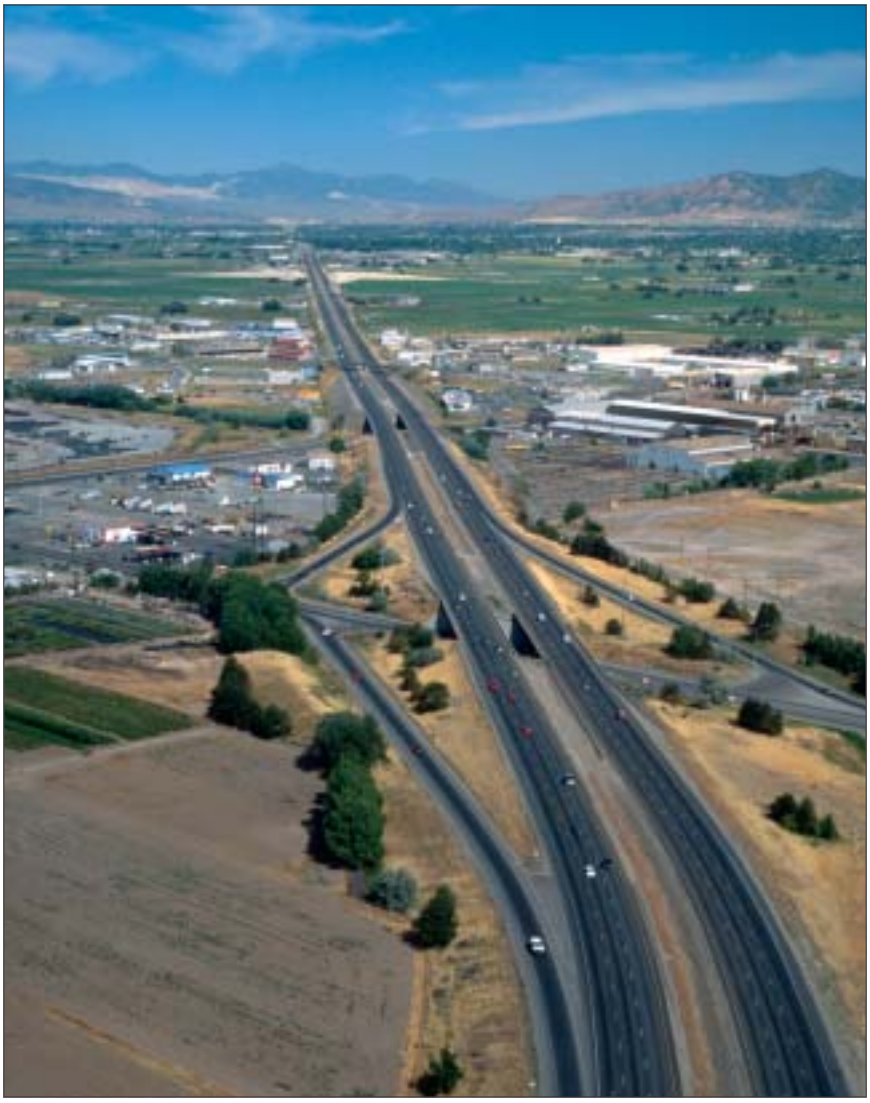
The federal government has likewise encouraged states to explore these ventures, incorporating more flexibility in the use of TEA dollars with each reauthorization. Traditional funding sources are not able to keep pace with the increased transportation infrastructure requirements, and many agencies are now open to the private sector participation to address priority programs that the current public sector balance sheet would not be able to support. Toll roads are often associated with private sector participation as they bring a new funding source that can be leveraged for bonding or other investment repayments. Another benefit of the private sector's increased participation in the project oversight, quality control, and operation, public agencies can take on these large, complex projects within their staffing constraints.

Measured Decisions

The synergy of design-build and private sector involvement has yielded a number of success stories from Virginia to California, as well as projects best characterized as "learning experiences." But even as these approaches gain broader acceptance among the nation's transportation agencies, the depth of experience remains comparatively narrow.

A limited number of agencies have either the funding or the staffing available to undertake large-scale design-build transportation programs. Agencies are often left with more questions than answers as to how design-build would work in these complex situations, let alone utilize private-sector financing or operations/maintenance services.

One fundamental principle of project delivery is that no method is universally applicable to every transportation challenge. The decision is highly project- and goal-specific. For example, although Utah's I-15 and Denver's T-REX (Transportation Expansion) programs were both good candidates for design-build delivery, they required drastically different approaches because of their project specific requirements. The state of Utah placed schedule as the project's number one goal, as the I-15 corridor had to be open for the 2002 winter Olympics, while the T-REX project placed minimization of impact to the public as its priority. The result produced specifications on the I-15 project allowing the contractor to close down complete sections of I-15 and shift traffic to alternate roadways to achieve the accelerated schedule. However, Denver's program not only kept all existing lanes open during the peak traveling periods, but actually created additional capacity during portions of the construction schedule to reduce the impact to the surrounding communities.



One fundamental principal of project delivery is that no method is universally applicable to every transportation challenge. Utah placed schedule as the project's number one goal as the I-15 corridor had to be open for the 2002 winter Olympics. The result produced technical specifications on the I-15 project allowing the contractor to close down complete sections of I-15 and shift traffic to alternate roadways to achieve the accelerated schedule.

The Other Side of the Story

Many factors influence which projects are appropriate for alternative forms of delivery, including the need for expedited speed of delivery, complex construction conditions such as the need to work under extreme traffic conditions,

Carter & Burgess provided project oversight engineering services on behalf of the Northwest Parkway Public Highway Authority for the design-build contract of a 9.5 mile toll road north of the Denver metropolitan area. Construction oversight responsibilities included monitoring the design-build contractor's construction progress, their quality control program—including compliance with released-for-construction drawings and specifications—and their quality control and inspection testing activities.

as well as the desire to obtain guaranteed fixed costs and completion dates. Elements of risk transfer in these contracts often include obtaining all construction permits, coordinating utility relocations, and even right-of-way acquisition activities. However the ultimate responsibility for right-of-way may need to be retained by the owner due to statutory requirements governing such acquisition including the right to exercise the power of condemnation. In Florida for example, a contractor may be held up for over a year after the design team has defined right-of-way requirements and applied for permits. Most agencies are, however, recognizing the benefits of project advancement and are working toward minimizing the obstacles.

Design-build solutions may also initially encounter resistance internally from transportation agency staff unaccustomed to delegating something as important as day-to-day control over the project to someone else. But the truth is that the agency does retain control—it sets down the goals and parameters of what the design-build team will deliver and maintain an oversight and acceptance role. The key is building communication and trust into the processes so that the design-build team is free to make decisions on how to best meet those goals.

Program management oversight, value engineering, and claims management services were provided by Carter & Burgess to the Los Angeles to Pasadena Metro Gold Line Foothill Extension Construction Authority for the design-build construction of the $438.8-million Metro Gold Line. A vital link in the overall Los Angeles County rail transit system, the line includes 13 stations and extends 13.7 miles from Union Station in downtown Los Angeles through South Pasadena to its initial terminus in the I-210 freeway median at the Sierra Madre Villa Station in Pasadena.

For these contracts to work effectively there must be a transition in the project specifications to a greater focus on results rather than methods. Overly prescriptive specifications make it more difficult for the design-build team to innovate and take advantage of cost-saving efficiencies—two of the very benefits the approach is intended to provide.

Another potential stumbling block is ensuring that risk allocation is both appropriate and fair. As with other project delivery issues, this decision is highly project-specific. Agencies may prefer to transfer as much risk as possible to the design-build team, but there are costs involved that should be carefully considered. The ideal situation is to assign risk to the party best able to handle it according to the project's objectives, financing, scheduling, and complexity.

Pondering Payment

The bottom line for any program, of course, is money—of which few states and localities have enough. While Europe and other countries have long utilized private-sector concessions approaches to fund, design, build, operate, and maintain major roadways, the building and financing of roads in the U. S. has traditionally been a public sector function. This is strongly influenced by three factors: 1) our federal transportation funding program, 2) the unique U. S. tax-exempt bond market with its preferential rates for publicly owned projects, and 3) U. S. tort liability laws, which tip the scales towards public ownership of transportation facilities.

With most states mired in the worst budget crisis since World War II, involvement of the private sector in financing is getting a new look. The term private sector financing can mean many things. For projects such as E-470 in Denver and Route 895 in Richmond it meant involvement of the private sector in obtaining a tax-exempt financing that was backed by "new" toll revenues rather than state or federal gasoline taxes. It can also mean moving to more of a franchise or "concession" approach where a private sector partner develops, finances, and operates a facility for a fixed period of time and then returns

the facility to the public owner. This approach was used for the development of the SR125 toll road in San Diego and is currently being negotiated for the expansive Trans Texas Corridors projects in Texas.

Private sector financing may be attractive to states that have an already heavy debt load or are unable to do bonding. If the developer retains responsibility for the financing or it is handled by a separate tax-exempt entity, the state retains a higher credit rating. Issuing the bonds as a non-profit entity may also enable the contractor to receive more favorable interest rates.

For toll roads, it may also be advantageous to the owner to have the contractor assume a larger role in the management of essential services, such as automated toll collection systems. Rather than having to budget additional staff to support the new system, an agency may realize greater value by having the same entity that did the design and installation handle day-to-day operations and maintenance.

Between design-build and a concession, the Design/Build/Operate and Maintain (DBOM) approach is a particularly attractive vehicle for new light rail transit systems where a technical services contractor and railcar company work together on design and construction. Maintenance needs are greater because the cars cannot be taken out of service for extended periods, and the company that manufactured the system is often better equipped to handle this responsibility.

But just as design-build is not a cure-all for highways, DBOM is not a panacea for transit. It depends on the transportation agency's size, expertise, and comfort level in outsourcing such a sensitive function. A good example is Denver's Transportation Expansion (T-REX) project, a landmark $1.67-billion design-build program that integrates light rail into a heavily used 19-mile highway corridor. The regional transportation district already had a good operations department in place that was experienced with the existing components of Denver's light rail system. It made sense for them to take on the T-REX segment as well to ensure continuity of service region-wide.

Risks and Rewards

Regardless of an agency's experience level with expedited project delivery, the decision-making process should always begin at the same point—with a thorough examination of both the project's goals and the available options for achieving them. It is in the agency's best interests to examine all possibilities and assure that decisions are based on solid information. That is the only way to find the best approach to achieving the goal of greatest quality, value, and benefit to the public. GE

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Assessing Alternatives

Every trip begins the same way—with an origin and a destination. Sometimes, however, the best route for getting from one to the other is not always apparent. What may appear to be the fastest route may actually be filled with obstructions and dangers. A slower "scenic route" may not live up to expectations and put a strain on the travelers' patience. The goal becomes finding the route that best balances time, cost, risk, and experience.

For the Washington State Department of Transportation (WSDOT), the journey in question is the planned extension of SR 509, a six-lane freeway that currently connects Seattle's South Downtown with South 188th Street near Seattle-Tacoma International Airport. Plans call for continuing SR 509 to Interstate 5 near South 211th Street with a three-mile, six-lane extension that will include two HOV lanes. The project also includes additional travel lanes and interchange improvements on I-5, and a new southern access route to the airport.

The benefits of the project are many—reduced congestion on I-5, improved truck access to Seattle's industrial district, and elimination of several crash-prone traffic choke points. Design-build or other expedited project delivery approaches could achieve these goals sooner, but also potentially add costs and complications to an already expensive project.

Which way should WSDOT go with SR 509? Carter & Burgess (www.c-b.com) is helping the agency choose the best route through a comprehensive analysis of the various project delivery options. The firm evaluated design-bid-build, design-build, construction manager at risk, and other approaches to see which method or combination of methods are best suited to the project's needs, opportunities, and constraints. The study encompassed issues such as cost, cash flow and scheduling, risk allocation, right-of-way acquisition, quality assurance and quality control, and effects on residents and travelers. It also assessed legislative and regulatory factors associated with some of the project delivery approaches, as well as economic trends that are defining the region's construction industry.

WSDOT Project Manager Susan Everett said that while multiple factors go into making a project delivery decision, "the Carter & Burgess study identified those issues that would take precedence in helping us recoup the design-build premium. Among the key factors were opportunities for innovation, definable risk, traffic control, and earthwork management."

Such a comprehensive evaluation is important, as sections of the 509 corridor present different characteristics and, as such, different project delivery opportunities. "One large section would be ideal for design-build, as innovation would be valuable in mitigating traffic impacts and speeding construction," she said. "Another section that includes a Superfund site is far less suitable. Our specifications would be very prescriptive, which would limit innovation. Assigning that risk to the contractor would almost certainly result in an a much higher bid, making design-bid-build a more viable alternative." GE