

TRANSPORTATION INVEST IN OUR FUTURE



Accelerating Project Delivery

AMERICAN ASSOCIATION OF
STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

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Introduction

Today, a typical highway project can take from 10 to 15 years to complete—up to six years for the environmental process, and up to nine years or more for planning, design, and construction.

Such delay has very real consequences for the American public. Inadequate and congested highways cost drivers thousands of hours of lost time, and cost businesses millions of dollars in productivity. Stalled highway safety improvements literally cost lives in accidents that might have been avoided.

In today's world, businesses in need of highway access in order to open a major employment center, commuters losing thousands of hours due to gridlock, or a port facing an avalanche of growth in containers cannot wait a decade for transportation solutions. States lose credibility with the public and fail to meet national needs through such a protracted project delivery process. Achieving compliance with the complex array of Federal laws and regulations is daunting. The business world does not operate that way and neither should government.

The Federal government should set a goal of cutting the current project delivery time in half, achieving in five to seven years what now takes 10 to 15.

The following report contains recommendations and case studies that demonstrate such a goal is achievable.

- During the project development stage, state and local agencies, by exercising environmental stewardship, are improving credibility with resource agencies and community stakeholders, and achieving closer collaboration on project planning and environmental permitting.
- During the construction stage, innovative contracting methods, advanced construction techniques and materials, and the advantages made possible by public-private partnerships can shave not months but years from project delivery. Lessons learned in swiftly restoring highways and bridges after a natural disaster are equally applicable to non-emergency projects.

Federal agencies also play a vital role in delivering projects swiftly and safely. The U.S. DOT's "Highways for LIFE" initiative and the President's Executive Order on Environmental Streamlining are examples of strong leadership that U.S. DOT has provided in the recent past. They are to be commended for what has been achieved.

Action by Congress in the most recent reauthorizing legislation, SAFETEA-LU, to encourage streamlining of the Federal process has been, in part, successful. Limitations on the length of time projects may be held up by lawsuits, and partial reform of the 4(f) review process, have made significant inroads in reducing project delay, as has the "de minimis" process that frees projects with little environmental impact from rigorous review. Other areas have yet to bear fruit, while still others, as identified in this report, have been interpreted in ways that actually will hinder, rather than expedite, project delivery.

What is needed now is *focus*. The establishment of “macro-goals” for Federal transportation and resource agencies can focus efforts on achieving overall program goals, rather than endless individual project scrutiny.

Another need is *direction*. An important step in advancing project delivery is clarifying the primary role to be played by the Federal Highway Administration (FHWA). Under current law, the agency is serving dual purposes, which at times conflict. FHWA should be the primary Federal proponent for improving the nation’s mobility, acting as a strong partner with state departments of transportation (DOTs) in delivering transportation projects as expeditiously as possible. But in its stewardship role, FHWA is also called upon to enforce the myriad environmental regulations that have grown up from the more than 40 different statutes enacted by Congress related to transportation. This enforcement responsibility comes at a time when state legislatures have enacted equally effective, or even more stringent, stewardship requirements at the state level.

It is time to end this divided mission and to make clear that the primary responsibility of the FHWA and the U.S. DOT is to improve mobility for the American people in the most expeditious way possible. They should also assure that this is accomplished in ways that satisfy federal laws which protect the environment. Completing project reviews faster in no way precludes doing them well.

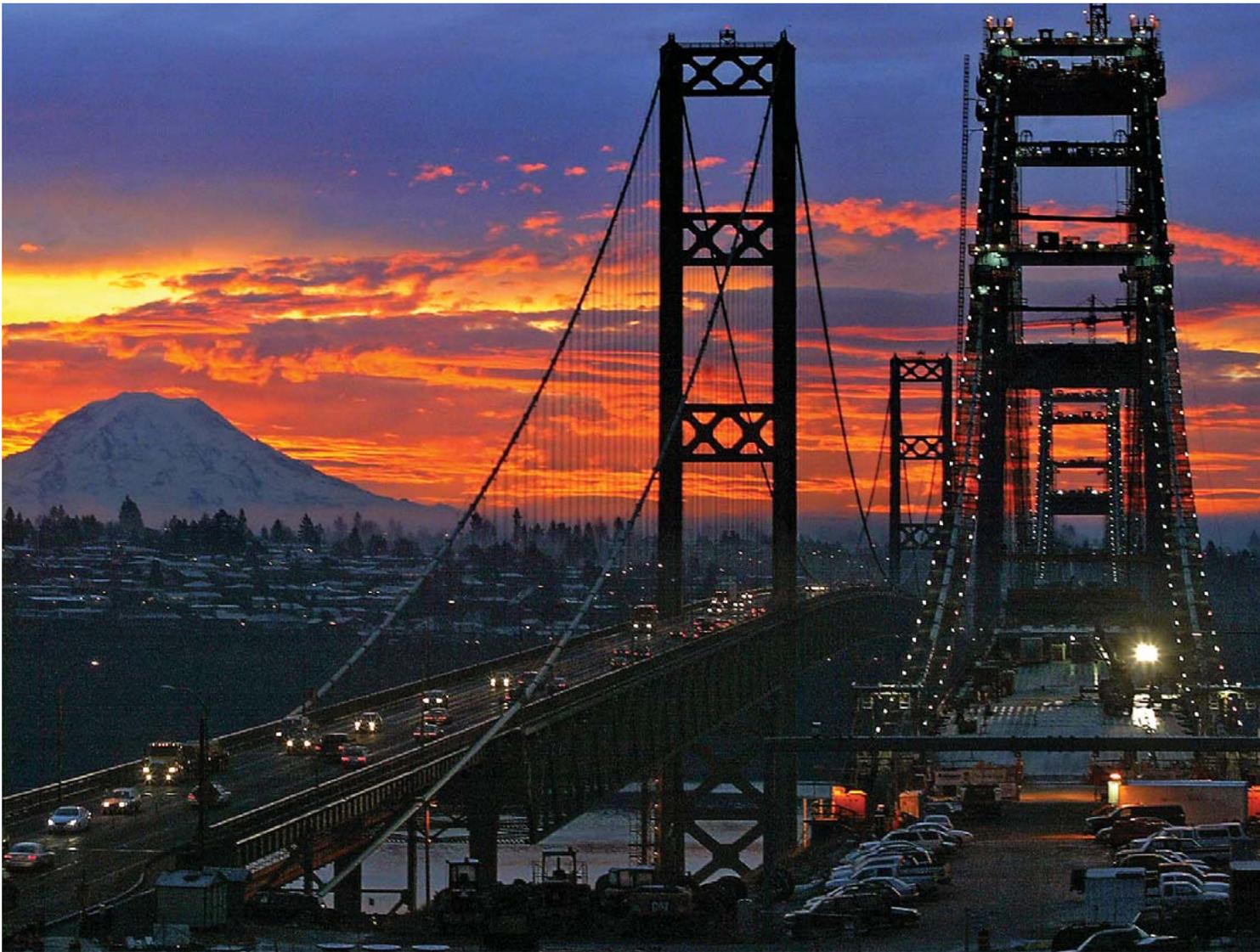
What is needed on a constant basis is for U.S. DOT to commit itself to help states deliver projects as fast as possible, and to enlist other Federal agencies in this approach. At stake are economic and social objectives for the country that are just as important as the environmental objectives states are being asked to attain. It is essential to work together to achieve all of these objectives to deliver transportation improvements when communities need them.

As states seek to deliver Federal-aid transportation projects, they must negotiate a maze of legal, technical, and analytical requirements at both the national and state level during planning, programming, design, construction, and related activities.

By addressing ways to accelerate project review and delivery, the National Surface Transportation Policy and Revenue Commission has an opportunity to bring the Federal regulatory process into the 21st Century, enabling transportation agencies to put transportation improvements into place in time to meet America’s growing needs.


John Horsley
Executive Director





Dean Koepfler/The News Tribune, Tacoma, WA/2006
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The newly opened Tacoma Narrows Bridge in Washington State was constructed using design-build contracting, a tool that accelerates project delivery.

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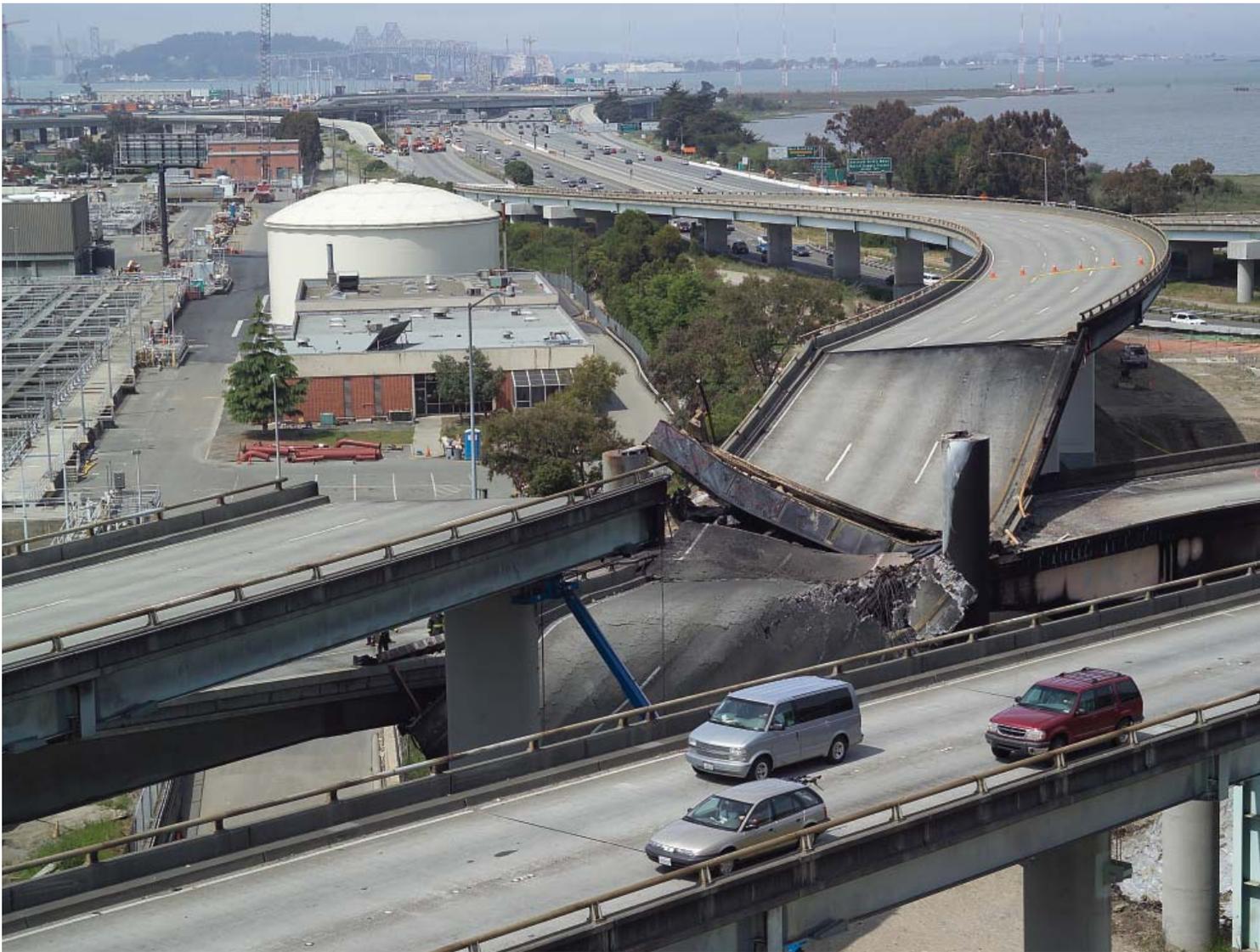


Photo courtesy of the California Department of Transportation.

When a fuel tanker-truck destroyed a freeway overpass that feeds traffic to the San Francisco-Oakland Bay Bridge, commuters expected months of congestion until the road was reopened.

PROJECT DELIVERY IN 26 DAYS— CALTRANS SHOWS HOW IT'S DONE



At 3:42 a.m. on Sunday, April 29, 2007 the driver of a tanker truck carrying 8,600 gallons of fuel lost control on a freeway overpass in Oakland, California, and the vehicle flipped onto its side and exploded. Flames shot hundreds of feet into the air—engulfing the roadway deck above the burning vehicle. As temperatures in the inferno soared, the deck section buckled and fell.

The overpass was part of a freeway complex that leads to and from the heavily-used San Francisco–Oakland Bay Bridge. When word of the overpass closure reached area commuters, they were sure that months of congestion lay ahead as the California Department of Transportation (Caltrans) restored the damaged roadway.

Not only the fire-destroyed section—known as the 580 connector—but also the roadway it crashed onto, the Highway 880 connector had to be checked for safety and possible reconstruction. Later on the day of the wreck, California Governor Arnold Schwarzenegger made a declaration of emergency that allowed the use of streamlined contracting and environmental procedures. Officials estimated that it would take 50 days to reopen the 580.

Twenty-six days later, the section was back in service—thanks to Caltrans' immediate response, and use of incentives to bring in a contractor who recognized that for the driving public,



Photo courtesy of the California Department of Transportation.

Using incentive contracting and streamlined contracting and environmental procedures, Caltrans reopened the roadway in only 26 days.



Photo courtesy of the California Department of Transportation.

Governor Arnold Schwarzenegger congratulates Director Will Kempton and Caltrans for delivering the overpass repair in half the time expected.

time was money. *The San Francisco Chronicle* named Caltrans Director Will Kempton, “California’s best new hire of the 21st Century.”

Caltrans set an outside deadline for reconstruction of June 26, then promised a bonus of \$200,000—to be capped at \$5 million—for every day earlier than that date that the project was brought to completion. Although bids on the project ran as high as \$6.4 million, the job was awarded to C.C. Myers Inc., which put in a bid for \$867,075—the lowest bid—and won the full \$5 million bonus by getting the work done so quickly.

Oklahoma Interstate 40 Bridge Opens in Record Time

On May 26, 2002, the Interstate 40 Bridge at Webbers Falls, Oklahoma was destroyed when an Arkansas River barge went off course and struck its support columns. Each day the bridge was out of service cost the regional economy \$430,000. Traffic had to be detoured 57 miles eastbound and 12 miles westbound, and motorists several states away were warned to avoid the area.

Getting the bridge back in service would normally have taken six months. Instead, Oklahoma DOT Director Gary Ridley recognized the urgency of restoring service, and used an incentive contract to get the bridge back in service just 65 days after it was struck and 47 days after construction began. U.S. Secretary of Transportation Mary Peters (then the Federal Highway Administrator) at the ceremony dedicating the newly opened bridge stated, “I salute the people in the public and private sectors who worked so hard to restore this vital link in America’s transportation system in record time.”

What both of these projects demonstrate is that, in the case of an emergency, Federal and state governments and the private sector can do whatever it takes to restore service. The question remains why it has to take so long to complete transportation projects absent an emergency.



Photo courtesy of the Oklahoma Department of Transportation.

Damage from a runaway barge to the Interstate 40 Bridge in Webbers Falls, Oklahoma created a 57-mile detour for eastbound traffic. The Oklahoma DOT used an incentive contract to get the bridge back in service in only 65 days after the accident.



Photo courtesy of the Florida Department of Transportation.

Quick action by the Florida DOT and FHWA enabled replacement of the Escambia Bay Bridge on an accelerated schedule after it was destroyed in a 2004 hurricane.

KEY FINDINGS



- 1. Completion of transportation projects takes too long.** Today, a typical highway or transit project can take from 10 to 15 years to complete—up to six years for the environmental process, and up to nine years or more for planning, design and construction. That is unacceptable. **The Federal government should set a goal of cutting the current project delivery time in half, achieving in five to seven years what now takes 10 to 15.**
- 2. Clarify the primary role to be played by FHWA.** Today FHWA plays a dual role spending as much effort achieving compliance of transportation projects with federal environmental requirements, as actually helping to get those projects built. **It is time to make clear that the primary responsibility of the FHWA and the U.S. DOT is to improve mobility for the American people in the most expeditious way possible.**
- 3. When disasters strike, Federal and state governments have shown a remarkable ability to quickly restore service.** Twenty-six days after a tanker fire destroyed an access ramp to the Bay Bridge in Oakland, Caltrans restored service. Sixty-five days after a barge destroyed an I-40 bridge, Oklahoma DOT rebuilt that bridge and got it back in service. Similar success stories can be told of rapid restoration of service in Louisiana, Mississippi, and Florida after devastating hurricanes destroyed highways and bridges. In each case, U.S. DOT and FHWA helped make these successes possible through quick decision making and extraordinary collaboration. Methods used to fast-track projects in emergencies should be options for non-emergency projects as well.
- 4. When the need arises, states have proven their ability to accelerate construction through the use of innovative contracting.** When Indiana DOT determined that it had to repair the inner loop in Indianapolis where Interstates 65 and 70 meet, but that this would tie up traffic for six months, they opted instead for a faster solution. Through an incentive contract, work scheduled to take 85 days was completed in 55 days. When Utah DOT needed to complete a \$1.5 billion project to rebuild Interstate 15 in time for the 2002 Salt Lake Winter Olympics, they used a design-build contract and accelerated project completion by over four years. Innovative contracting is a vital tool that should be encouraged.

5. **Sixty months is the current average time to complete National Environmental Policy Act (NEPA) reviews on major transportation projects.** Fast-tracking environmental reviews on the \$1.6 billion T-REX project in Denver, allowed a record of decision (ROD) to be issued by the year 2000, in 25 months. That same year, the NEPA process for the Route 19 Missouri River Bridge took 24 months from notice of intent to record of decision. **When requested to do so by state or local government project sponsors, U.S. DOT should establish a goal to complete the NEPA process for major projects in 24 months.**
6. **Federal agencies have played a vital role in delivering projects swiftly. U.S. DOT's "Highways for Life," initiative and the President's Executive Order on Environmental Streamlining are examples of strong leadership.** What is needed on a constant basis is for U.S. DOT to commit itself to help states deliver projects as fast as possible, and to enlist other Federal agencies in this approach. At stake are economic and social objectives for the country that are just as important as the environmental objectives states are being asked to attain.
7. **Some recent Federal actions will hinder, rather than expedite, project delivery.** For example, SAFETEA-LU authorized states to assume delegations of FHWA's environmental role. Most states have chosen not to seek delegation authority because of FHWA's interpretation that if they do so they must give up the option of advanced right-of-way acquisition and final design paid for with non-Federal funds. **The Commission should call for removing this obstacle to delegation, either via a policy change by FHWA, or by a statutory change.**
8. **Create Partnerships between Resource Agencies and Transportation Agencies.** Historically, there has been a virtual chasm between transportation agencies and environmental resource agencies. All would benefit from a closer working relationship. One example of successful partnering is in the development of programmatic agreements (PAs). Programmatic agreements reduce workload for both transportation and resource agencies, while protecting the environment and speeding up project delivery. For example, Ohio DOT and the US Fish & Wildlife Service recently finalized a programmatic agreement for the Indiana bat, an endangered species. Prior to the agreement, ODOT had to spend large amounts of time and money analyzing impacts for individual projects and addressing concerns raised by FWS. The PA eliminates most project-by-project reviews and provides a streamlined review process to address impacts to the Indiana bat for all of ODOT's road projects. ODOT in turn invests resources in efforts that will assist in the recovery of the species. ODOT expects to see substantial time and cost savings from this agreement. By partnering, DOTs and resource agencies can achieve both swift project delivery and environmental protection.
9. **Apply common sense in addressing indirect and cumulative environmental impacts.** Under several Federal laws, states must assess the indirect and cumulative impacts of transportation projects. Mitigation is sometimes required even for impacts associated with non-transportation activities. Some Federal agencies have been convinced to use this authority to extract dollars from transportation agencies well beyond reason, because the transportation agencies have deep pockets, or to drive the cost of projects so high, they have to be cancelled. **The Commission should call for the Council on Environmental Quality (CEQ) to clarify the parameters for indirect and cumulative impact analysis and mitigation.**

- 10. Reform or eliminate Clean Air Act conformity regulations because of the progress being made through cleaner fuels and cleaner engines.** After decades of EPA regulations to clean vehicle engines and fuels, emissions from highway vehicles have dropped dramatically—far more than in any other sector. As older trucks and cars are continually replaced by clean vehicles and fuels, the pay-off from air quality conformity requirements becomes increasingly negligible. Yet the conformity process is convoluted and ties up MPOs, state DOTs, FHWA, and EPA, all of which could better devote their time to more productive opportunities to improve transportation and the environment. **The Commission should recommend that Congress take a close look at the Clean Air Act conformity requirements, to determine whether they will have a meaningful effect in the future, given how effective EPA’s engine and fuel requirements have been in lowering vehicle emissions to a small fraction of 1960 levels.**
- 11. Open the door to innovative contracting and public-private partnerships by making the “Extraordinary” the “Ordinary.”** Tremendous progress has been made through two “Special Experimental Projects” authorized by U.S. DOT through SEP-14 which focused on “Innovative Contracting,” and SEP-15 which focused on Public-Private Partnerships. Both permit variations to traditional approaches and exempt projects from federal restrictions. SEP-14 enabled approaches such as “cost-plus-time” incentive bidding, lane rental, “design-build” and “best value” rather than low bid contracting. SEP-15 enabled states to “explore alternative approaches to the overall project development process,” clearing away federal obstacles which stood in the way of completing environmental reviews, right-of-way acquisition and project finance. **Rather than granting such exceptions on a case-by-case basis, they should be granted on a programmatic basis. If the process works and can be justified, the extraordinary should be made the ordinary.**
- 12. Change federal policies so corridors for the future can be identified and preserved,** so the U.S. can meet its mobility needs for the next century, not just the next twenty years. If not, we will condemn our grandchildren to gridlock. Over the next 50 years the U.S. is expected to grow by 140 million people. It may grow by a similar amount in the last half of this century. Current federal environmental restrictions make it extremely difficult to identify and preserve transportation corridors for the future. Unless they are preserved now, it will be almost impossible to reacquire them once urban areas are developed. **Corridor preservation by states should be supported and encouraged by the federal government, and federal statutes standing in the way should be changed.**



Photo courtesy Indiana Department of Transportation.

Using an innovative approach to construction called Hyperfix, the Indiana DOT completely closed I-65/I-70 in downtown Indianapolis in order to rehabilitate 33 bridges and reconstruct 35 miles of pavement. Completed in only 55 days, the project saved more than \$1 million per day versus traditional construction techniques. See page 44.

CHAPTER 1

Why Do Transportation Projects Take So Long?



When faced with emergency reconstruction, state departments of transportation can deliver projects with amazing speed. But far more often, moving transportation projects from concept to construction takes much longer than it should, and the effects can be profound—on the costs of the projects, on the economic health and quality of life of the places they are intended to serve, and on the benefits that are lost in terms of saving lives, reducing travel time, increasing transportation performance and reliability, and preserving the transportation system.

Why do these critical transportation improvements take so long, and what can be done to speed up the process, while delivering safe, efficient, and environmentally sound projects?

State officials have been pressing for solutions for many years. SAFETEA-LU included key provisions for streamlining the project delivery process and state DOTs are employing an impressive array of practices to advance projects more quickly, but there is still much more to do. The purpose of this report is to take a fresh look at why projects take so long to develop and implement, and what can be done to shorten the process.

A major transportation project can easily take 10 to 15 years from start to finish, even in the absence of controversial issues that can slow it down still further. A typical timeline for a major project might be:

- 2 to 3 years in planning, either as part of a long-range transportation planning effort or a corridor feasibility study,
- 4 to 6 years to address the National Environmental Policy Act (NEPA) requirements and produce a record of decision,
- 2 to 3 years for detailed design,
- 1 to 2 years for right-of-way acquisition and utility relocation, and
- 2 to 3 years for construction.

It adds up to more than a decade.

Using the traditional, sequential project planning and delivery approaches, it is rare for a major project to evolve from initial planning to ribbon-cutting in less than 10 years. And if there are controversial issues, the process can take even longer—if it ever reaches closure. One example is the Inter-County Connector in Maryland, where construction is just getting under way over 30 years after the planning and environmental stage was begun.

There are often several interrelated factors that delay a project, and sometimes the actual cause may be hidden. For example, funding a project may not be considered seriously until environmental issues are resolved, and without a final alternative identified the project might not be added to the capital program. Thus, without construction funding shown in the capital program, it may appear that a lack of funding is delaying the project when, in fact, there are other factors involved.

The bottom line is that there are many reasons why projects do not proceed as fast as it seems they should. This report outlines the more significant causes of delay and proposes ways not yet in common practice that could substantially reduce the amount of time required to develop and deliver a major transportation project.

While small projects are not immune to delay, and collectively they represent a majority of transportation projects, the focus of this report is on those that are beyond the scope of minor projects such as pavement resurfacing, intersection improvements, and safety upgrades, which typically take two to three years from start to finish. Nevertheless, many of the strategies illustrated in this report are as applicable to small projects as they are to the larger ones.

Two overarching challenges affect the efficient delivery of transportation projects:

(1) coordination of Federal requirements; and

(2) the processes used to deliver projects.

These two factors affect project delivery from beginning to end and have been the most intractable in terms of addressing and improving project delivery.

Piecemeal Federal Requirements Add Delay

No responsible parties advocate sweeping aside the environmental requirements that protect important resources. But the accumulation over time of piecemeal Federal requirements has resulted in overly-complicated processes to achieve compliance, particularly when attempting to meet targeted schedules and budgets.

Environmental requirements begin with the National Environmental Policy Act (NEPA) and extend to numerous individual statutes and regulations that address the natural, social, and built environments, most of which require some form of Federal sign-off in the form of a permit or an agreement. NEPA is broad, cross-cutting, and predicated on the idea of evaluating alternatives and making tradeoffs. However, the individual statutes that govern air, water, parkland, historic properties, rare and endangered species, and other resources are much more narrowly focused and do not contemplate nor do they readily facilitate the comparative assessments and tradeoffs among factors that characterize NEPA and the “real world” process of project development. The complex maze of statutes, regulations, and multiple agencies with inconsistent mandates and variations in interpretation of policies and regulations is a dominant factor in explaining why projects take so long to deliver.

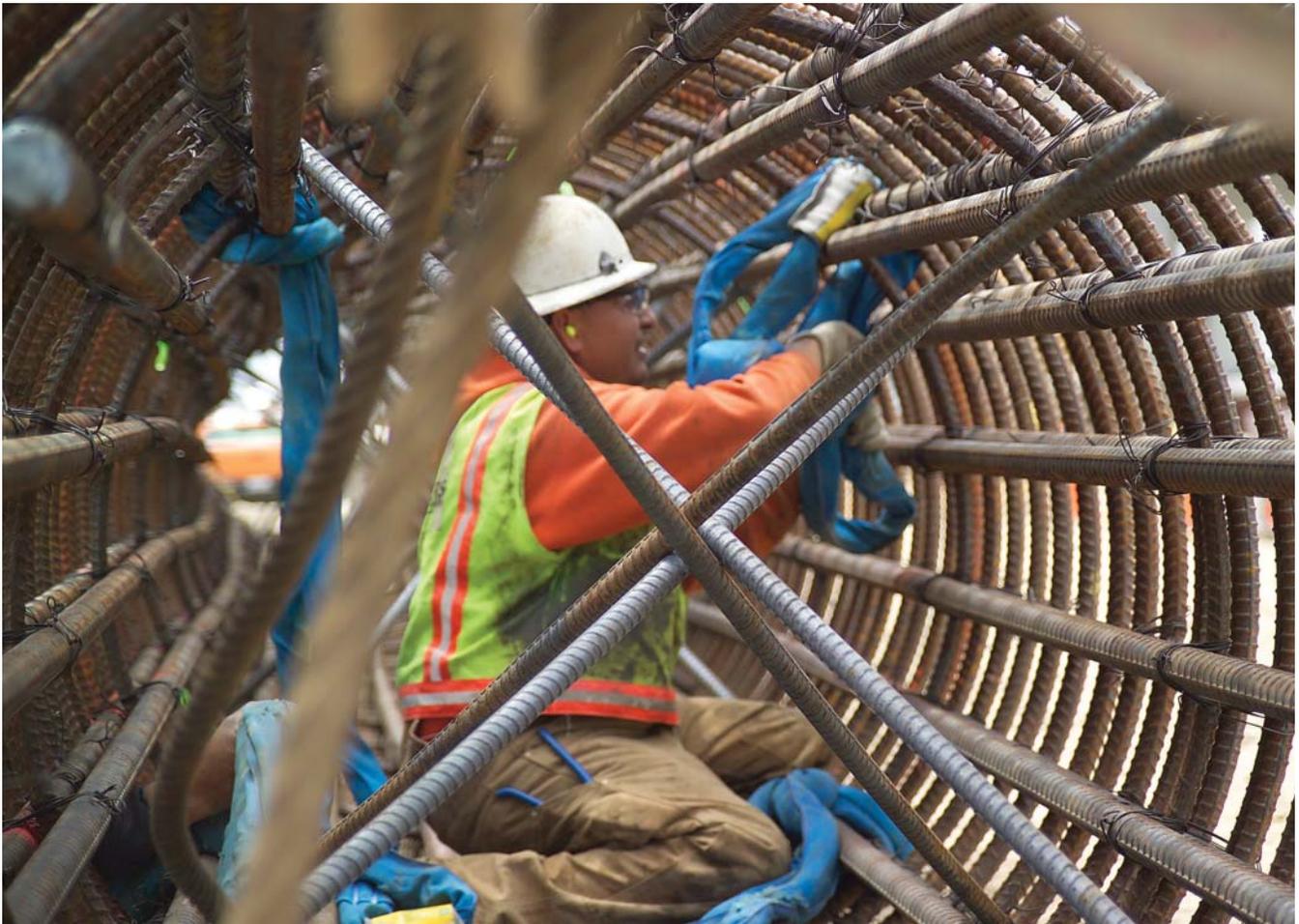


Photo courtesy of the California Department of Transportation.

Accelerated project delivery strategies can benefit projects large and small.

Inconsistencies and variations within agencies, between headquarters and field offices, and particularly among field offices, are both common and vexing.

The complex maze of statutes, regulations, and multiple agencies with inconsistent mandates and variations in interpretation of policies and regulations is a dominant factor in explaining why projects take so long to deliver. Inconsistencies and variations within agencies, between headquarters and field offices, and particularly among field offices, are both common and vexing.

At the heart of the problem are the differences among Federal transportation and environmental resource agencies in terms of their fundamental purposes and missions and, too frequently, an inability to reconcile those differences. This effort to bridge the gap between transportation and resource agencies has been the subject of voluntary efforts, executive orders, and Federal legislation, most recently SAFETEA-LU. Vital to this effort is FHWA's need to prioritize its mission of highway development while negotiating with environmental resource agencies.



Photo courtesy of the Oklahoma Department of Transportation.

Night-time construction is one of the techniques used by states to accelerate project delivery and minimize traffic disruption.

Fragmented Processes Add to Complexity

The second issue affecting the time required to deliver projects has to do with the fragmented way in which the multitude of stages, phases, and activities are carried out. Attempts have been made to depict the project delivery process from beginning to end using a flow chart showing all activities and how they relate. These charts depict hundreds of steps, and require displays measured in feet rather than inches. They are virtually impossible to comprehend because the process is so complex, in large part due to the myriad of uncoordinated Federal requirements that currently exist.

Allowing concurrent, rather than sequential, processes can speed project delivery as well as foster collaboration between stages. Failure to achieve such collaboration often results in delays.

To advance a project in the most efficient and effective way, consideration of issues surrounding a project's design and construction should begin during the early stages of planning and environmental analysis. Factors involved in the design and construction of a project can have a profound effect on issues being addressed during planning and environmental work, and these factors should be considered in those early phases, even in the absence of much detail. Allowing concurrent, rather than sequential, processes

can speed project delivery as well as foster collaboration between stages. Failure to achieve such collaboration often results in delays.

Accelerating Project Delivery Demands Change

Opportunities for significantly accelerating transportation project delivery are evident. Projects such as I-15 in Salt Lake City, which was completed four years ahead of what would have been expected through a traditional contract, and I-25 (T-Rex) in Denver, which was completed more than a year ahead of schedule, illustrate the benefits of design-build project delivery. Fort Washington Way in Cincinnati achieved comparable results with traditional contracting using early and continuous constructability and concurrent phasing. These projects clearly demonstrate what is possible when the political and managerial will exists to make it happen.

But making the “exception” the “rule” requires systemic changes in the way Federal requirements are developed and applied, as well as in their implementation.

Recommendations for Accelerating Project Delivery

Reform Federal Laws and Regulations

- Allow states to assume SAFETEA-LU delegations of authority without losing their ability to conduct advance right-of-way acquisition and final design with non-Federal funds
- Fine-tune SAFETEA-LU environmental process provisions (e.g., extend time period for the five-state pilot environmental delegation program in section 6005; add language strengthening state ability to use planning products in NEPA process)
- Revisit Clean Air Act conformity regulations and statutory provisions based on current and future clean fuels and clean vehicles
- Reconcile 4(f) with NEPA, the National Historic Preservation Act, and other environmental laws
- Overhaul Clean Water Act’s Section 404 wetlands permitting requirements to deal with confusing court interpretations and establish a simpler, more pragmatic, timely permitting process
- Over the next 10 years, comprehensively reform Federal environmental laws to (a) integrate them and eliminate conflicts; (b) entrust more authority to states; (c) introduce flexibility; (d) focus more on meaningful outcomes instead of rigid processes; and (e) replace penalties with incentives
- Eliminate Congressional earmarking which forces states to expend time and resources initiating environmental reviews of projects that are unlikely to move to construction.

Spur Resource Agencies and FHWA to Increase Streamlining Efforts

- Obtain FHWA and resource agency commitment to use planning products in NEPA

- Increase Congressional oversight of resource agency streamlining progress (e.g., hold hearings, convene meetings with resource agency staff, request information from resource agencies on timeliness, etc.)
- Request resource agencies to commit increased staff to streamlining efforts
- Request resource agencies to commit staff to engage actively in planning partnerships with states
- Request resource agencies to fully support Programmatic Agreements
- Ensure that FHWA field staff take a stronger role in managing environmental processes
- Ensure that all Environmental Impact Statements (EISs) have schedules and that schedules are met, as required by SAFETEA-LU Section 6002
- Ensure that FHWA elevates disputes promptly, for higher-level resolution
- Endorse the use of the “Eco-Logical” handbook, as a source of flexible, effective alternatives

Develop Better Guidance on Indirect and Cumulative Impacts (ICI)

- Request FHWA, CEQ, and other Federal agencies to adopt clear, reasonable parameters for ICI analysis, consistent across different agencies and different laws
- Request FHWA, CEQ, and other Federal agencies to establish reasonable, clear parameters for ICI mitigation responsibility, consistent across different agencies and different laws

Adopt Reasonable, Effective Federal Policies on Global Climate Change (GCC)

- Focus Federal statutory and policy changes on high payoff GCC strategies for transportation, especially vehicle and fuel improvements
- Support funding for increased research on effective GCC strategies for transportation agencies and funding for the adaptation of transportation infrastructure to respond to changes in climate, sea level, etc.
- Refrain from piling on unproductive GCC requirements that increase workload with little payoff

Enable Earlier Right-of-Way Acquisition/Corridor Preservation

- Enable the use of Federal funds for preservation of transportation corridors
- Ensure that Federal requirements (e.g., NEPA) are not interpreted in ways that discourage corridor preservation
- Ensure that the legal authority exists to acquire rights-of-way that will accommodate not just the immediate needs addressed by NEPA, but also the expansion that may be needed over the life of the facility
- Allow concurrent construction and right-of-way acquisition

- Make federal funds eligible for a revolving fund “bank” that all states could draw upon to invest in transportation corridor protection
- Remove barriers and restrictions in the legal, legislative, and regulatory arenas that hinder the expedient acquisition of right-of-way

Reduce Utility Delays

- Support research under the Strategic Highway Research Program (SHRP2) and other programs to reduce delays due to the need for utility relocation
- Encourage innovation in dealing with utility companies

Reduce Fragmentation of Rules and Regulations

- Reduce fragmentation within legislative and regulatory language to help encourage the efficient delivery of transportation projects
- Encourage collaboration and concurrent processing of the traditional stages of project delivery to achieve acceleration

Encourage Innovative Construction and Contracting Techniques

- Support funding to promote “out of the box” thinking when it comes to new and innovative construction strategies fostered by SHRP2 and other research programs
 - Continue to encourage the use of innovative contracting techniques to assist in the timely procurement and management of transportation projects, “mainstreaming” and lifting restrictions on their use
 - Correct regulatory changes regarding the concept of “preliminary design” in the design-build process
 - Expand opportunities for private-sector participation in project development through programs such as SEP-15
-



Significant efforts have been made at the state and federal level to achieve both environmental streamlining and environmental stewardship.

Missouri Route 19 Bridge Project

When there's new infrastructure to be built, it can only help to have the citizens behind the project.

In 1997, shortly after making highway improvements north of the Route 19 Missouri River Bridge due to severe flooding in 1993 and 1995, the Missouri Department of Transportation (MoDOT) began rehabilitating the existing bridge in an effort to address its deficiencies. Local citizens, concerned that the work slated would not completely eliminate the bridge's structural and operational problems, formed a committee to express support for construction of a new bridge. The efforts of that committee, along with Federal support and the increasing need for a new bridge in that location, led to the proposed action addressed in the environmental impact statement during the late 1990s.

The structural deficiency of the Route 19 Missouri River Bridge was identified as one of the key "need factors" prompting the study. The bridge was also found to be geometrically deficient overall, with negative effects on traffic operations. Further, bicyclists were found to be facing safety problems when they attempted to use the bridge, which was near a recreational trail.

Environmental issues identified included impacts on cultural resources and wildlife, loss of wetlands and flood plain, and business displacement.

The NEPA process for the Route 19 Missouri River Bridge project took 24 months, from notice of intent to record of decision. The bridge assessment deficiencies and resulting low rating, the efforts of the local transportation committee, Federal support, and an increased need for a higher capacity bridge due to local economic growth led to the proposed action presented in the EIS. This project was advanced directly to the NEPA process without extensive advanced planning, because the need for improvement was deemed urgent.

The timetable on the project began with a National Bridge Inventory rating in April 1998, issuance of a notice of intent in May 1998, approval of a draft EIS in February 1999, a public hearing in March 1999, final EIS approval in February 2000, and a record of decision in May 2000.

The project demonstrated that the NEPA process could be expedited by actively pursuing a detailed public-involvement strategy and building local support, and by stimulating effective interagency coordination.

Congress attempted in TEA-21 to streamline the environmental review process, but that effort met with limited success. In SAFETEA-LU, Congress enacted a package of measures aimed at streamlining the environmental review process while maintaining a high level of environmental protection. These measures are considered among the most important changes affecting the environmental review process for transportation projects since NEPA was enacted in 1970. However, the effectiveness of the implementation of these legislative actions remains to be seen. States, FHWA, and Congress have also sought to improve the planning process, with both additional procedural requirements and some additional flexibility, although planning has not received as much streamlining attention as the environmental process.

Despite all efforts to streamline the planning and environmental processes, there is still work to be done. The remainder of this section identifies the major planning and environmental challenges that impede the timely delivery of transportation projects and recommendations for improvement.

Fast-Tracking Environmental Reviews of Denver's Transportation Expansion Project (T-REX)

Interstate 25, the major north-south Interstate highway corridor in Colorado, had borne the traffic of a swelling population for over half a century as the Front Range turned from a Denver-based metropolis to a multi-city-spanning megalopolis. The highway needed major reconstruction and expansion to carry its current-day and future traffic, and development in the region pointed to a need for public transportation along the corridor.

The Colorado Department of Transportation, working closely with the Denver area's public transportation provider—the Regional Transportation District—worked out a reconstruction and new construction plan for 19 miles of the most heavily trafficked corridor on I-25, the area starting in Denver and moving out toward its southern suburbs. The project was dubbed the Transportation Expansion project, or "T-REX," and it involved a corridor that carried more than 230,000 vehicles a day and connected two of the largest employment centers in the region.

The area affected is predominantly urban and suburban, with little vacant or developable land. In addition to issues of residential or business displacements to do the needed work, there was also a need to address a likelihood of increased noise levels and, in some areas, loss of wetlands or adverse effects on historic sites.

A plan was devised to improve travel time and enhance safety along I-25 and I-225—a major bottleneck south of Denver that connected with I-25. Because the environmental impact statement included plans for new light rail along the corridor, the EIS was jointly sponsored by both FHWA and the Federal Transit Administration (FTA).

The NEPA process for the corridor took 25 months, from notice of intent to record of decision. Previous congestion and major investment studies indicated the need for the project, and those studies helped to identify and refine some of the alternatives, setting the stage for the environmental review process.

A notice of intent was issued in February 1998; a draft EIS was approved in August 1999. The NEPA public hearing on the T-REX project was held in September 1999, and the final EIS on the project was approved in December 1999. The record of decision came in March 2000.

The T-REX project demonstrated that the NEPA process for a complex urban project could be expedited by using previous studies to build momentum for the NEPA process, promoting aggressive public involvement, engaging the EIS consultant in NEPA interagency coordination activities, and co-locating the project team and consultants.

Clearing the Hurdles of Federal Laws and Requirements

While Federal and state laws and requirements are important to protecting the environment and ensuring a sound planning process, they present an enormous challenge to timely project delivery. Challenges include:

- The sheer number of Federal laws and related regulations and requirements;
- The rigidity of most of the individual laws;
- Inconsistencies or disconnects between Federal laws;
- The multiplicity of agencies charged with carrying out the laws;
- The detailed, hands-on, step-by-step oversight of Federal agencies for every project; and
- Constantly changing interpretations and applications of the laws over time.

The biggest challenge is the sheer number of Federal and state laws and requirements that apply to environmental approvals for highway projects. FHWA has identified over 40 Federal environmental laws, including the Clean Air Act, Clean Water Act, Endangered Species Act, National Historic Preservation Act, 4(f), and NEPA. Even lesser-known laws like the Migratory Bird Treaty Act and the Wild and Scenic Rivers Act can complicate and delay transportation improvements for many years. In addition, most states have their own state environmental laws and permit requirements, including “mini-NEPA” laws, air quality laws, stream and lake water quality laws, and wildlife protection. Add to these laws the Federal transportation planning requirements in Title 23, such as public involvement, inter-agency coordination, local official consultation, financial constraint, planning factors, programming time limits, and sharing of revenue information.

Each law was written at a different time, to support a specific mission, to be interpreted and carried out by a different agency. Some laws, like the ESA and 4(f), impose extremely stringent substantive standards, while others impose extensive procedural requirements. Each law is embellished with regulations and guidance from different agencies. There are inconsistencies and disconnects among the separate statutory provisions, agency regulations, and agency practices, and a lack of priority setting among all the requirements. Further complicating this plethora of laws and regulations, most Federal environmental agencies allow their field offices to have considerable latitude in interpreting them, leading to widespread variations in application across the nation. Also, statutes establish priorities that may not have been intended by Congress. For example, the substantive protection for parks and recreation areas under Section 4(f) is more stringent than protection for most natural resources under NEPA and other environment laws.

Each law may have merit individually, but collectively they represent an almost overwhelming maze of requirements that states must navigate. States must navigate this maze while joined at the hip with resource agency partners whose cooperation is essential, but who are often understaffed relative to workload, and rarely have a stake in a highway project. Moreover, for project opponents, these laws provide a rich menu of opportunities to delay or block a project.

Finally, and most frustrating, are the constant changes in interpretations or applications of the laws through regulations, statutory change, agency policy and guidance, and court decisions.

Despite the plethora of state environmental laws that duplicate or overlap with Federal environmental laws, most Federal environmental laws do not allow for delegation of authority to states. The “close hold” of Federal agencies over step-by-step implementation of

Federal environmental laws is a major source of delay, due to lack of Federal staff, growing Federal workload, inconsistent interpretations among agencies and their field offices, and unexpected changes in Federal policy.

Recommendation: Reform Federal Laws and Regulations

- ***Allow states to assume SAFETEA-LU delegations of authority without losing their ability to conduct advance right-of-way acquisition and final design with non-Federal funds:***

SAFETEA-LU authorized three types of delegations of FHWA's environmental role:

- Categorical Exclusion (CE) projects;
- Five-state pilot delegation for NEPA and other laws; and
- Five-state pilot delegation for Recreational Trails and Transportation Enhancements projects.

Unfortunately, most states have chosen not to seek delegation authority, because of the SAFETEA-LU requirement for states to waive sovereign immunity and FHWA policy interpretation limiting states' ability to do advance right-of-way acquisition and final design for delegated projects. The FHWA interpretation is particularly problematic because it concludes that if a state accepts delegation authority, it must give up some flexibility it previously had to use state funds for advance acquisition of right-of-way and for final design work. Specifically, FHWA previously allowed states to acquire right-of-way and conduct design work prior to completion of NEPA, as long as it was done with non-Federal funds and done "at risk." This "at risk" work has been an important tool for expediting project delivery by starting right-of-way acquisition and design while environmental reviews are being completed. However, FHWA has concluded that if it delegates its NEPA responsibilities to a state, then that state can no longer engage in any "at risk" final design or right-of-way acquisition. This interpretation has made delegation a far less attractive option, and is causing many states to decide not to seek delegation at all. (In fact, one of the five states designated in Section 6005—Ohio—recently decided not to proceed with delegation, in part because of concerns about effects of delegation on Ohio's ability to conduct "at risk" work prior to completion of the NEPA process.) The Commission should call for removing these obstacles to delegation, either via a policy change by FHWA or by a statutory change.

- ***Fine-tune SAFETEA-LU environmental process provisions (e.g., extend time period for the five-state pilot environmental delegation program in section 6005; and add language strengthening state ability to use planning products in NEPA process).***

In the next transportation reauthorization, Congress should expand upon the streamlining changes in SAFETEA-LU and make some adjustments. For example, the five-state pilot delegation of FHWA's environmental authority under Section 6005 expires in 2009. This authority should be extended by at least five

years to allow adequate time to test and evaluate the delegation (especially in view of the 5+ years typically required to complete an EIS). Other opportunities to improve the value of this pilot delegation through legislative fine-tuning may emerge over the next year. Similarly, as states gain experience with the Section 6002 environmental process changes, they will most likely identify statutory refinements that would enable them to better meet the intent of Section 6002. (For example, problems have already arisen around changes in analytical methodologies used in NEPA, as to whether any methodological change requires a state to go back to the agencies and the public.)

■ ***Reform or eliminate Clean Air Act conformity regulations and statutory provisions based on current and future clean fuels and clean vehicles:***

After decades of EPA regulations to clean vehicle engines and fuels, emissions from highway vehicles have dropped dramatically—far more than in any other sector. More important, as older trucks and cars are continually replaced by clean vehicles and fuels, the pay-off from air quality conformity requirements becomes increasingly negligible. Yet the conformity process is convoluted and ties up MPOs, state DOTs, FHWA, and EPA, all of which could better devote their time to more productive opportunities to improve transportation and the environment. Congress should take a close look at the Clean Air Act conformity requirements, to determine whether they have had a meaningful impact on air quality—or, more importantly, whether they will have a meaningful effect in the future, given how effective EPA’s engine and fuel requirements have been in lowering vehicle emissions to a small fraction of 1960 levels.

■ ***Reconcile 4(f) with NEPA, National Historic Preservation Act, and other environmental laws.***

Under the stringent standards of 4(f) of the DOT Act, there are legions of examples of lengthy delays and higher project costs triggered by the need to avoid privately held historic properties, which the owner later demolishes or allows to fall into ruin. Moreover, for historic resources, 4(f) is duplicative of protections under the National Historic Preservation Act (NHPA). Compliance with the NHPA 106 protections should satisfy the requirements of 4(f) for historic resources. While SAFETEA-LU made modest improvements in 4(f), it remains to be seen whether U.S. DOT’s new, pending 4(f) regulation will make full use of the opportunity provided by Congress. The Commission’s strong support is needed for the adoption of final regulations that truly fulfill the goal of simplifying and streamlining compliance with 4(f). If the rulemaking is unsuccessful, Congress should consider integrating 4(f) under other environmental laws, based on a similar level of protection, rather than retaining a stringent stand-alone 4(f) standard.

■ ***Overhaul Clean Water Act Section 404 wetlands permitting requirements to deal with varying court interpretations and establish a simpler, more pragmatic, timely permitting process.***

The 404 permitting process has become exceedingly burdensome, complex, unpredictable, and time-consuming. The permitting workload causes substan-

tial backlogs in 404 permit processing. Recent Supreme Court decisions have complicated matters, because of split decisions that are forcing the Corps of Engineers to walk an impossible tightrope, exacerbated by shared decision-making authority with EPA. Congress needs to step in and provide for a simpler, more timely and pragmatic permitting process that protects wetlands in a fair and reasonable way.

- ***Over the next 10 years, comprehensively reform Federal environmental laws to (a) integrate them and eliminate conflicts; (b) entrust more authority to states; (c) introduce flexibility; (d) focus more on meaningful outcomes instead of rigid processes; and (e) replace penalties with incentives:***

Congress should look for opportunities over the long term to modernize and harmonize Federal environmental and planning laws. Most valuable would be replacing “hard” and punitive requirements with incentives and flexibility. Also valuable would be weeding out ineffective requirements and excessively complex requirements with little or no clear pay-off. Finally, as part of this long term comprehensive reform, Congress should enact statutory changes to authorize the delegation of Federal environmental agency roles to the states, most likely to be carried out by state environmental agencies. Currently, there is limited provision for delegation to states under Federal environmental laws (such as under the Clean Water Act, for the 404 permitting program), but most Governors and state legislatures support strong environmental protection, and states have enacted strong environmental laws of their own, equaling or even exceeding Federal environmental laws. States should be entrusted with carrying out Federal environmental laws without detailed step-by-step oversight by a dozen Federal environmental agencies. Federal resource agencies could continue to play a role, focused on review and Quality Assurance.



States have enacted strong environmental laws of their own and want to be entrusted with stewardship responsibilities.

Maryland U.S. 113 Clears NEPA in 15 Months

The road that eventually became U.S. 113, a road that passes through both Delaware and Maryland in the Eastern Shore areas of both states, dates back to 1697 and was once used by a relative handful of Americans. Today, it is a lifeline of commerce and recreation for beachgoers from as far away as New York and New Jersey, traveling to a chain of sought-after beach communities from Lewes, Delaware, south to Chincoteague, Virginia, with all of Maryland's popular Atlantic Ocean beaches in between.

The Maryland Department of Transportation sought to develop and evaluate alternatives aimed at improving safety conditions and traffic operations along the two-lane portions of U.S. 113, the majority of which is in Maryland. The road had high accident rates and its condition was projected to deteriorate from grades of "C" and "D" during the highest-traffic summer months to a grade of "F" by the year 2020, without operational improvements.

Most of the area surrounding the highway was rural—agricultural land or forest and woodland. It also included several small residential communities.

Working under an expedited schedule, the NEPA process for Maryland's portion of the U.S. 113 project took 15 months from notice of intent to record of decision. The project followed the streamlined environmental and regulatory process for Maryland. Previous planning studies had identified some of the alternatives and potential impacts, which served as a preview as well as a facilitator for the actual NEPA process.

Potential environmental issues included loss of wetlands, effects on community cohesion, possible impact to an archaeological and historic site, destruction of habitat for listed species, loss of farmlands, and secondary or cumulative effects.

A notice of intent was issued in February 1997, a draft EIS was approved in May 1997, the NEPA Public Hearing was held in June 1997, a final EIS was approved in February 1998, and the record of decision on the Maryland project was recorded in May 1998.

Maryland's U.S. 113 Planning Study showed that, despite significant environmental concerns and agency resistance early in the planning efforts, the National Environmental Policy Act process can be completed in a timely manner by implementing a streamlined NEPA process, building on strong local public support, and initiating NEPA-type studies outside the official NEPA process.

Achieving Partnership Between Resource Agencies and FHWA

Historically, there has been a virtual chasm between transportation agencies and environmental resource agencies, in their missions, culture, and work practices. For example, resource agency roles have typically been regulatory, whereas transportation agency roles have focused on delivering projects. This divide has been the source of significant delay, as resource agency staff inject unrealistic requirements, introduce new requirements late in the process, or do not have a sense of urgency to move the review process forward. Al-



Programmatic agreements are an effective way to eliminate project-by-project review and streamline the environmental review process. Partnering between the DOTs and the U.S. Fish and Wildlife Service has been effective in protecting endangered species.

though there has been meaningful improvement over the past 5–7 years, and transportation agencies have seen an increased willingness by resource agencies to partner, there are still issues and room for improvement.

Inadequate staffing at resource agencies is an acute problem. Particularly lacking have been resource agency staff to coordinate with state DOTs and FHWA in early planning, which is one of the most promising areas to reduce conflict and streamline the process. Many resource agencies assert that while workloads escalate, their staffing numbers decline, because of cuts imposed by Congress and the Executive Branch. In TEA-21, Congress allowed states to provide relief to resource agencies by paying for positions in resource agencies. However, state funding of resource agency positions does not meet all the needs in these agencies and it comes at a cost to often beleaguered transportation agencies.

Certainly, there are many outstanding examples of resource agency staff who have been excellent partners and worked hard to help state DOTs advance projects that are good for transportation and the environment.

Programmatic Agreements Make a Major Contribution

One example of successful partnering is in the development of programmatic agreements (PAs). PAs are a major contribution to improving and streamlining the environmental process. Programmatic agreements are developed by states through negotiations with FHWA and resource agencies, usually resulting in written agreements that spell out broad categories of projects which can be advanced under pre-agreed conditions, with little or no need for individualized reviews. PAs can involve a single environmental law and its administering agency, or they can be multi-party, involving several

laws and agencies. PAs are win–wins for everyone, as they reduce workload for both transportation and resource agencies, while protecting the environment and speeding up project delivery. For example, Ohio DOT (ODOT) and the US Fish & Wildlife Service (FWS) finalized a programmatic agreement (PA) for the Indiana bat. The Indiana bat is an endangered species in 26 states, including Ohio. Prior to the PA, ODOT had been consulting with FWS on each individual project in Ohio, encountering increased FWS scrutiny and spending large amounts of time and money analyzing impacts for individual projects and addressing concerns raised by FWS. The PA eliminates most project-by-project reviews and provides a streamlined review process to address impacts to the Indiana bat for all of ODOT’s road projects. The PA allows resources to be invested in efforts that will assist in the recovery of the species. ODOT expects to see substantial cost savings from this agreement.

However, there are also some staff and resource agency units that are ambivalent to highway projects, or are so focused on their agency mission that they inject unrealistic requirements, introduce new requirements late in the process, fail to attend key meetings, and raise the bar on state DOTs with little or no warning. An example is a recent Interstate highway project in New England where an environmental agency held up an EIS, insisting that the state DOT not only adopt new practices to control salt runoff on both the existing Interstate lanes and the planned additional lanes—but also offset the salt runoff from private and municipal parking lots which were in place long before the highway project at issue. In other cases, resource agencies or environmental advocacy groups demanded excessive purchase of habitat or wetlands, well beyond the impacts of the project. Often the state DOT is seen as “deep pockets”—yet often the state realizes the cost of project delays will be so high that it will capitulate rather than prolong negotiations.

Ultimately, resource agencies and transportation agencies need to be strong partners in advancing projects that are good for the environment and good for transportation. Measures of a successful partnership would be increased programmatic approaches and moving from planning to implementation more quickly. Another measure would be DOTs no longer having to pay for liaisons to resource agencies due to a work load reduction from streamlined processes.

FHWA has also experienced workload increases and staffing reductions. Several state DOTs have identified short staffing in FHWA Divisions as a problem, to the extent of seeking to hire and pay for staff for FHWA Divisions. Many state DOTs would like to see FHWA be more assertive in addressing issues raised by resource agencies and in gaining resource agency commitment to meet schedules, attend meetings, and support flexible approaches, such as programmatic agreements.

Both FHWA and resource agencies have an opportunity to help state DOTs streamline by using transportation planning products at the start of the NEPA process and developing programmatic agreements rather than conducting project-by-project reviews. All too often, transportation planning has been conducted independently of the NEPA process, which means that much of the work done in planning is revisited in project development/environmental reviews. State DOTs and FHWA are changing this, by strengthening planning so that it can frame project purpose and need, project alternatives, and information on indirect and cumulative impacts—and then carrying this information forward into the NEPA process. State DOTs would like to see a strong commitment by both FHWA and resource agencies to support these approaches and truly stand behind planning products as a starting point for NEPA.

Recommendations: Encourage FHWA and Resource Agencies to Intensify Streamlining Efforts

- *Obtain FHWA and resource agency commitment to use planning products in NEPA, and include supportive language in the next reauthorization cycle;*
 - *Increase Congressional oversight of resource agency streamlining progress (e.g., hold hearings, convene meetings with resource agency staff, request information from resource agencies on timeliness, etc.);*
 - *Request resource agencies to commit increased staff to streamlining efforts;*
 - *Request resource agencies to commit staff to engage actively in planning partnerships with states;*
 - *Request resource agencies to fully support Programmatic Agreements;*
 - *Ensure that FHWA field staff take a stronger role in managing environmental process;*
 - *Ensure that all EISs have schedules and that schedules are met, as required by SAFETEA-LU 6002;*
 - *Ensure that FHWA elevates disputes promptly, for higher level resolution; and*
 - *Endorse the use of the Federal "Eco-Logical" handbook, as a source of flexible, effective approaches to providing environmental mitigation and enhancement that can streamline environmental reviews and permitting.*
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Earmarking Creates Uncertainty

One of the major challenges to timely project delivery is the growing gap between transportation needs and transportation revenues. The problem is exacerbated by the growing use of Congressional earmarks and rescissions.

As the funding gap widens, it becomes harder to reach agreement on the list of projects to be programmed in STIPs and TIPs. Local officials, state legislators, project advocates, and others compete, apply pressure, and negotiate to get "their" projects in plans, STIPs, and TIPs. These uncertainties and conflicts slow down the planning process.

Earmarks exacerbate the problem, because many earmarks are not priorities in the state/local transportation planning process, so they are additive to the funding dilemma as well as to the planning and environment workload. Worse yet, the vast majority of earmarks provide only a small amount of the total cost of the project, forcing states to either delay higher priority projects, not program the earmark at all, put the burden on local governments to come up with the remainder of the funding, or, as is common, spend the earmark on planning and environmental studies with little chance of the project advancing.

Recommendation: Eliminate Earmarking

Elimination of earmarking would knock out the projects which did not rise to the top of the state/local planning process and which contribute heavily to delays.

Common Sense Needed in Addressing Indirect and Cumulative Impacts

Under NEPA, the Endangered Species Act, and the Clean Water Act, states must analyze indirect and cumulative impacts (ICI) for transportation projects. In addition, resource agencies have authority to impose conditions on their permits and project concurrences and require states to mitigate for ICI (even for ICI associated with non-transportation activities).

This presents two major challenges that are a growing source of delay. First, there are no clear parameters for how much ICI analysis is needed—how far out in time and how far ranging in geography; this results in a growing number of stalemates and delays as transportation and resource agencies disagree on the extent of *analysis* required. Second, there is no clear Federal guidance on a “reasonable” level of *mitigation*, which also results in a growing number of stalemates and delays as transportation and resource agencies disagree over mitigation responsibility. Additional time is required to resolve these disputes and to carry out the level of analysis that is finally agreed upon. Further, delays may ensue when a state acquiesces to ICI mitigation, which often requires the cooperation of third parties and may even entail land use commitments.

Recommendation: Develop Better Guidance on ICI

- ***Request FHWA, CEQ, and other Federal agencies to adopt clear, reasonable parameters for ICI analysis; and***
 - ***Request FHWA, CEQ, and other Federal agencies to establish reasonable, clear parameters for ICI mitigation responsibility.***
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To reduce the delays associated with ICI, the Federal government should establish clear parameters for indirect and cumulative impacts *analysis* and also should establish reasonable parameters for *mitigation* of indirect and cumulative impacts. CEQ is probably in the best position to do this, focusing on reasonable parameters for transportation projects and involving both FHWA and the resource agencies in developing parameters that all agree to follow.

Global Climate Change May Spawn New Regulation

Global Climate Change (GCC) could soon become a significant factor in our social, political, and environmental life and, unless addressed with care, could potentially add to transportation project delays. Federal and state legislation to reduce greenhouse gases (GHG), including reductions from the transportation sector, appears imminent. Some states have

already acted, and amendments are now pending in Congress. One opportunity to reduce GHG appears to be through changes in transportation engines and fuels. This would mirror the experience under the Clean Air Act, where improvements in vehicle fuel and engines have resulted in major emission reductions.

Reducing GHG by reducing highway VMT is a much greater challenge, and unlikely to be successful unless Congress and the public support high levels of road pricing and/or strict land use controls to create the density needed for high levels of transit and carpooling. Absent such measures, new legislative requirements on states to plan/program based on GHG are unlikely to be effective, but would add to the plethora of Federal requirements states must navigate to deliver projects.

Recommendation: Adopt Reasonable, Effective Federal Policies on Global Climate Change

- ***Focus Federal statutory and policy changes on high payoff GCC strategies for transportation, especially vehicle and fuel improvements;***
 - ***Support funding for increased research on effective GCC strategies for transportation agencies and funding for the adaptation of transportation infrastructure to respond to changes in climate, sea level, etc.; and***
 - ***Refrain from piling on unproductive GCC requirements that increase workload with little pay-off.***
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As Congress, the Executive Branch, and states adopt laws and policies to reduce GHG emissions, they should refrain from simply piling on more requirements, and especially refrain from repeating the mistakes of the Clean Air Act conformity process. Instead of a complex, ineffective numbers process, Congress and others should seek to establish incentives and be guided by realistic estimates of potential GHG reduction strategies. Above all, it is unrealistic and unproductive to expect state DOTs to reduce VMT unless Congress and the public will support hefty road pricing and sweeping controls of land use. Recognizing these limitations, Congress could help state DOTs reduce GHG emissions by funding research to identify innovative approaches to GHG reduction, such as maximum safe use of highway rights-of-way for trees and other green vegetation, environmentally friendly pavements, and maintenance and construction practices that minimize GHG.



Relocation of utility lines is one of the top factors leading to transportation project delays during the detailed design and construction phase.

CHAPTER 3

Accelerating Project Delivery During Detailed Design/Construction



Once the NEPA process is concluded and a record of decision is issued, a project may move to the Detailed Design/Construction Stage, which includes detailed design (including environmental permits), right-of-way acquisition, utility relocation, contracting, and construction. States strive to deliver projects within budgets and on schedule while facing daunting demands—thousands of plan sheets for detailed roadway and bridge design, hundreds of parcels of real estate to acquire, dozens of utility lines to relocate, dozens of environmental permits and agreements to secure, thousands of pages of contract documents to prepare, and hundreds of millions, if not billions, in construction dollars to manage.

The goal is to “get it right the first time,” since the consequences of mid-course corrections or mistakes can be huge. Delays during detailed design and construction may put property owners in limbo for years while they wait for right-of-way acquisition, yet they cannot sell or improve their property. Delays during this stage may also cause detailed plans to need to be re-drawn, involving months (if not years) of additional delay and millions of dollars in wasted effort. Delays during construction can include unexpected utility problems, which may bog contractors down while workers and equipment sit idle.

Working “At-Risk” Can Advance Construction

On Federally-funded projects, decisions to proceed with detailed design and construction activities prior to the issuance of a ROD are “at risk,” in terms of their eligibility for Federal funding if changes are made to the point of nullifying the “at-risk” work performed. This is a strategic and pivotal point in the life of transportation projects where preferred and selected alternatives are frequently identified as much as a year or two prior to the formal Record of Decision. The dilemma posed is very simple: Should the detailed design/construction stage be initiated in advance of the record of decision when preferred alternatives are identified at the draft environmental document phase or when selected al-

ternatives are identified at the final document phase. While putting Federal funds at some risk, if the probability is high that preferred or selected alternatives will be approved with the record of decision, the benefits of a major schedule acceleration opportunity may outweigh the risk. Clearly it is a matter of assessing, weighing, and managing these risks.

In the detailed design/construction stage, work occurs in the distinct phases of right-of-way, utilities, detailed design, contracting, and construction. Environmental permitting, which is discussed in the design section, is clearly a cross-over phase that must begin in the planning/environmental stage with impact assessment and mitigation options identified, but final permits are dependent on the details of final design. None of these phases involves activities that can successfully be performed in isolation and environmental permitting is an excellent example. While the need for greater integration and forward collaboration cannot be overstated, nowhere is this more true than in the relationship between detailed design and construction.

Accelerating Right-of-Way Acquisition

Right-of-way acquisition is often considered one of the top three sources of transportation project delay, along with environmental processes, and utility relocation. Right-of-way personnel are frequently caught in an ever shrinking time window, waiting for the designer to confirm what properties to acquire, and then having to secure rights-of-way by a fixed date so that construction can begin. In addition, if condemnation is required under eminent domain, they are often at the mercy of an overburdened judicial system. Nevertheless, right-of-way staffs around the country have succeeded in a variety of ways to avoid the hot-seat of critical path delays with such strategies as:

- Streamlining internal right-of-way practices in terms of contacts with property owners, appraisals, appraisal review, negotiations, relocation assistance, and implementing settlements.
- Acquisition of total takes on a negotiated basis by deed description rather than meets-and-bounds plats.
- Protective buying and hardship acquisitions where long-range land use and transportation plans show rights-of-way for planned future improvements and these properties are threatened by development or owners may be suffering a hardship due to restrictions that impair their ability to use or sell their property.
- Reducing eminent domain cases through policies that encourage greater flexibility in negotiating with property owners.

There are several areas of opportunity for the right-of-way acquisition process to go faster:

- Permitting concurrent right-of-way acquisition during construction; and
- Re-structuring Federal and state processes to permit earlier acquisition of properties.

Concurrent Right-of-Way and Construction: Though there are risks involved, there are times when it makes sense to consider advertising or awarding projects before right-of-way has been fully acquired. This process could include placing right-of-way availability dates into the request for bids so that the project can proceed around the pending acquisitions. This process allows traditionally sequential processes to overlap, thus saving time. However, this process is still the exception, not the rule.

Recommendation: Concurrent Right-of-Way and Project Awards

FHWA should recognize a concurrent approach to construction and right-of-way acquisition as a legitimate option when the justification, risks, and risk-management actions have been adequately addressed.

Advanced Acquisition for New Facilities: Perhaps the most significant potential to accelerate project schedules and reduce costs involves encouraging greater corridor preservation through advanced right-of-way acquisition without undermining planning and environmental processes. This is a major opportunity which the Commission may wish to emphasize.

Advanced acquisition of future rights-of-way generally reduces time and costs, as well as the disruption to property owners and communities where a corridor containing private land is designated in a long-range plan. Where properties are undeveloped but potential community-compatible uses exist, the land could be leased on an interim basis for uses such as landscape nurseries, outdoor storage, parking, or recreation. In addition, there are alternatives to outright acquisition that may mitigate the impacts of taking property off the tax-rolls and creating large tracts of under-utilized land. An example of this would involve purchasing “development rights” in a corridor years in advance of a project, which limits the land to its current use but precludes future development until the land is needed for the intended transportation use.



Photo courtesy of New Mexico Department of Transportation.

Acquiring sufficient right-of-way for future expansion can save time and money, a major opportunity for project acceleration in future years.

Currently, the ability to use Federal funds for corridor preservation is severely restricted. Until the NEPA process is completed for a transportation project, Federal funds can only be used to acquire individual parcels that meet the definition of “hardship” or “protective” acquisitions. Because these exceptions are relatively narrow, it is difficult to protect a continuous corridor until after the NEPA process is completed for the entire project. As a minimum, it should be possible to expand advanced acquisition to all willing sellers rather than just protective and hardship purchases.

Compounding the problem of not being able to acquire right-of-way for projects without an approved environmental document is that, in practice it is often difficult to justify preparing an environmental document for a project that won’t be constructed for a decade or more into the future. In fact, FHWA often won’t agree to participate in conducting the NEPA process for projects that are too far in advance of anticipated construction. This creates a “Catch 22” situation in which a Federally-approved environmental process must be completed before right-of-way can be protected through acquisition, but projects that are way off in the future cannot justify the early initiation of required environmental impact assessments.

Some States, such as Illinois, have laws that facilitate corridor preservation by allowing the state—through its planning process—to adopt a map showing the route for a proposed transportation corridor. This designation provides a basis for the state to begin acquiring land well before the corridor is developed. This designation also provides a basis for local governments to coordinate their land use plans with the location of the future transportation corridor.

Recommendations on Corridor Preservation

- ***Corridor preservation by states should be supported and encouraged by the dissemination of best practices and model legislation. New ways, including legislation if necessary, should be found to enable Federal funds to be used for preservation of transportation corridors. The Federal requirements (e.g., NEPA) should not be interpreted in ways that discourage corridor preservation.***
 - ***States should have the flexibility, using their own funds and Federal funds, to acquire right-of-way well in advance of project construction if the viability of a project would otherwise be threatened. Experience has shown that having appropriate right-of-way in advance does not compel a project to be built, but not having needed right-of-way can create massive disruption and can be the death knell of a project.***
-

Advanced Acquisition for Facility Expansion: Part of corridor protection involves the need for and the ability to acquire sufficient right-of-way to allow for future expansion. Environmental laws today require transportation planners to minimize impacts. In practice, this means there is strong pressure to acquire as narrow a right-of-way as possible—and only that right-of-way associated with the record of decision. While motivated by legitimate environmental concerns, this approach tends to discourage—and even prevent—the prudent acquisition of sufficient right-of-way to allow for long-term future widening.

Recommendation on Right-of-Way for Future Expansion

- ***Action is needed to ensure that the legal authority exists to acquire rights-of-way that will accommodate not just the immediate needs addressed by NEPA, but also the expansion that may be needed over the life of the facility, as included in adopted long-range plans. When it comes to acquiring rights-of-way, transportation departments need a 50-to-100 year time horizon, not the 20–30 year horizon associated with most project development.***
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There are also financial obstacles to preserving transportation corridors. As a practical matter, most states lack the resources to make the investment in preserving future corridors, even though the long-term savings may be clearly demonstrated. The use of revolving funds—possibly at a national level—should be pursued to address what are often “penny wise and pound foolish” right-of-way acquisition practices.

Recommendation on Creation of Revolving Fund Corridor Protection Bank

- ***The use of Federal funds should be allowed for a revolving fund “bank” that all states could draw upon to invest in transportation corridor protection.***
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SAFETEA-LU’s requirements and opportunities for greater linkage of the planning and NEPA processes offers perhaps the best possibility to address the concerns of those who would say that corridor protection through advanced right-of-way acquisition threatens the integrity of the NEPA process. This is particularly true where state DOTs, through their involvement in statewide and metropolitan planning and in their ongoing relationships with U.S. DOT and environmental resource agencies, are able to successfully link planning and NEPA processes. Specifically, this means that decisions at the planning stage on purpose and need, land use, modal preference, and potentially, the likely corridor alignment of a transportation facility, will have standing under NEPA. This will provide a strong case that corridor protection through advanced right-of-way acquisition and NEPA are not incompatible.

There is a need for clear policy starting at the Federal level—within U.S. DOT and in statutes and regulations—to encourage corridor protection using a variety of tools.

Recommendation on Barriers to Right-of-Way Acquisition

- ***Barriers and restrictions in the legal, legislative, and regulatory arenas that hinder the expedient acquisition of right-of-way should be removed, while preserving the environmental integrity of the communities in which facilities are planned.***
-

Utility Relocation a Top Cause of Project Delay

Utility relocation enjoys the dubious distinction of being among the top factors that transportation professionals cite as causes of project delays. It is the rare major transportation improvement that does not have significant utility relocation needs, even in rural areas where the preponderance of improvements are along existing transportation facilities. In urban situations, the complexity of dealing with multiple utilities under multiple ownerships, with multiple “prior rights” possibilities, provides fertile ground for significant project delays.

Over the years, state DOTs have made improvements in addressing utility relocation issues through improved relationships with utilities; subsurface utility engineering which allows agencies to obtain reliable underground utility information and to manage that information throughout the highway project; advanced relocation of utilities; integration of utility relocation and transportation facility construction; and incentives and penalties for completing relocation work on or ahead of schedule.

However, many challenges still exist.

A history of transportation projects being shelved or postponed during the development process has caused many utility companies to be reluctant to commit funds for utility relocation until there is certainty that the project will be constructed.

State transportation departments have little or no administrative powers over utility companies that fail to relocate and clear utility conflicts to meet the project schedule. A history of transportation projects being shelved or postponed during the development process has caused many utility companies to be reluctant to commit funds for utility relocation until there is certainty that the project will be constructed. In many cases, the state transportation agency does not have authority to pay for the utility relocation, so it needs to be performed at the utility’s expense; therefore, it becomes a lower priority for the utility company.

SHRP2: One of the four priority areas in the second generation of the Transportation Research Board’s Strategic Highways Research Program (SHRP2) is the rapid renewal of infrastructure. Two priority SHRP2 research projects deal with utilities.

- Utilities Location Technology Advancements—research into new technologies to further enhance the reliability of Subsurface Utility Engineering (SUE); and
- Strategies for Integrating the Priorities of Utilities and Transportation Agencies in Highway Renewal Projects—finding ways to improve the utility coordination process.

Coordinated Transportation-Utility Corridors: Traditionally, on controlled-access facilities, utilities have not been permitted to encroach on state rights-of-way. The exception has been fiber optic telecommunication lines, which have been permitted by FHWA and states, largely because the DOTs utilize the bandwidth often provided to them as part of a negotiated arrangement for operational purposes such as ITS (Intelligent Transportation Systems) applications or other public sector uses.

The recent Trans-Texas Corridor initiative includes provision for utility rights-of-way as part of an integrated package, presumably with access for utility service vehicles that poses

no safety issues. It is too early to tell how well this approach will work, but it bears watching as a possibility for the increasingly rare cases where new access-controlled transportation facilities are planned and constructed on new rights-of-way.

Recommendation: Implementation of Research

- *The utilities-related research products under SHRP2 should be supported and the kind of innovation that is reflected in the utilities portion of the Trans-Texas Corridor project should be encouraged.*
-



Dean Koepfler/The News Tribune, Tacoma, WA/2006
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Ironworker Jerry Kerr of Olympia takes a coffee break from construction high atop the Tacoma Narrows Bridge in Washington State.

CHAPTER 4

Get In, Get Out, Stay Out— Accelerating Design and Construction



In the earliest years of highway development, the design and construction phase represented the bulk of project cost, as well as time. Now pre-construction activities represent the longest part of project development, but the time required for construction, and the associated disruption and safety concerns, remain major issues. This is particularly true of projects located in built-up areas along existing transportation facilities, which are almost always expected to remain in service during construction.

A Transportation Research Board conference in 1998 on expediting construction captured what has become the guiding principle in terms of minimizing the disruptive impacts of construction and maintenance activities to travelers and communities: “Get In, Get Out, Stay Out.” These six little words communicate volumes about the charge to the transportation community to expedite construction.

The potential benefits of accelerating construction, as well as accelerating the detailed design that drives construction, are very significant—to transportation users, to affected communities and businesses, to most contractors, and to the sponsoring agencies. These benefits are why there has been so much innovation in recent years, as reflected in current practices as well as the opportunities to meet the compelling challenge of getting it done faster without compromising quality or busting budgets.

There are many practices that have facilitated the acceleration of design and construction, including:

- Expediting Environmental Permitting and Project Agreements
- Application of Advanced Technologies
- Peer-Based Approaches for Sharing Advances,
- Prefabrication of Structural Elements
- Improved Materials and
- Alternative Construction Schedules.

Hyperfix Sets New Standard for Urban Interstate Renovation



HYPERFIX⁷⁰₆₅

In 2003, the Indiana Department of Transportation faced up to a public-safety task that could not be avoided: making major renovations to a section of center-city Indianapolis highway known as I-65/I-70. The work would ordinarily have taken 180–200 days over two construction seasons, with individual lanes closed off and resulting congestion and work-zone safety issues. And the road, which carried 175,000 cars per weekday, was even more heavily used by fans of the major events taking place at the Indianapolis Motor Speedway, including the Indianapolis 500.

Indiana Department of Transportation officials pondered how to get the work done in a tighter time frame.

They concluded that very rapid work could be done, with high quality, but only if the road could be closed completely to public traffic, so work could go on 24 hours a day, seven days a week. State DOT officials decided to go that direction, and began the massive planning, public-information campaigning, and preparation to reduce congestion and inconvenience to the area's motorists as much as possible. They dubbed the project "Hyperfix."

Months prior to the closure of the road, Indiana DOT worked closely with the city of Indianapolis to improve local roads that would be designated as detours for the closed highway. New signs were posted, and radio and TV ads were prepared to get the word out to the traveling public about the work ahead. Work started on May 26—the day after the Indy 500—and was done in 55 days, 30 days ahead of schedule.

Hyperfix:

- Added up to 15 years of service life to the improved roadway;
- Rehabilitated 33 bridge decks and pavement on about 35 lane-miles of highway, and extended merge lanes to help curtail traffic congestion;
- Significantly increased safety for the construction workers on the project, and for members of the driving public who didn't have to run the gauntlet of a work zone;
- Saved Indiana taxpayers more than \$1 million in lost wages and productivity for each day that traditional construction would have added to the project.

Continual communications were offered through a website, electronic dynamic message signs, and by putting project representatives in touch with the public via e-mail. There were also stakeholder, neighborhood, and community meetings, and citizens could sign up to get project updates via e-mail.

Overcoming Stovepipes and Silos

One of the greatest challenges that remains involves the compartmentalization of organizations, disciplines, rule-making, and processes. This compartmentalization—also known as silos or stove pipes—presents a formidable barrier.

Yet, contrary to much of the popular management literature, the elimination of silos and stove pipes is not the answer either. In fact, the consequences of this approach may be even more dire. In an age of technical sophistication and specialization, concentrations of expertise in technically-focused disciplines and organizational elements are necessary—even beneficial. The question is not whether to have compartments, but when and how they connect.

The ability to strike a balance between concentrations of expertise that seem to drive the formation of silos, and the need to build open and well-utilized lines of communication among them, is perhaps the greatest challenge to achieving high performance organizations and the impressive outcomes that they can produce. The key is greater integration through the use of teams that collaborate early and often.

Recommendation: Integrated Approach Can Speed Delivery

- ***Fragmentation of the project delivery process must be reduced, particularly in the legislative and regulatory areas. Statutory language should promote the need for greater integration of the stages, phases, and activities that are involved in project delivery, and ensure that Federal requirements don't inadvertently inhibit the efficient delivery of transportation projects.***
-

A more integrated approach for detailed design and construction can be fostered by the following approach.

Early Collaboration. It is not coincidental that every “innovative” approach to project delivery, such as design-build, construction manager/general contractor, or alliance contracting, involves measures which integrate construction issues into the detailed design process. Quite often, these innovative approaches also employ collaboration between the planning and environmental disciplines and construction managers who can (and should) have a voice that will influence a project from concept to implementation.

Simultaneous Instead of Sequential. Another huge opportunity for project acceleration involves performing certain activities concurrently, in an overlapping manner, instead of one after the other as is so common. There can be some legitimacy to proceeding one step at a time if outcomes of preceding steps are uncertain and the consequences of going down the wrong path are severe. However, this decision is strictly a question of risk management. More often than not, over the life of a project, some degree of concurrent or overlapping processing would offer significant time savings at relatively modest risk. This is particularly true in the detailed design/construction stage where the record of decision has been made and the focus is on achieving a “built project.” Yet, in traditional design-bid-build procurement, this is not occurring.

Performance Contracting. Performance contracting allows the agency to define specific goals they want to achieve in their construction projects, such as smoothness,

strength, and durability, while allowing the private sector to determine the methods used, including innovations to accomplish these goals that save time and money without compromising quality. FHWA has recently developed a performance contracting framework for a typical reconstruction/rehabilitation project, which can be used as a reference guide, helping owner agencies to accelerate the solicitation and development process while avoiding common obstacles and pitfalls.

SHRP2. One of the four Strategic Highway Research Program 2 (SHRP2) focus areas is “Renewal of Infrastructure,” and second-to-none in priority within this broad category is doing it faster. Research topics already launched will address:

- Managing Risks on Rapid Renewal Contracts;
- High-Speed, Non-Destructive Testing Procedures; and
- Rapid Embankment Construction.

Research is continually needed to assist in the development of the next generation of design and construction techniques that will allow for faster, better, and higher quality construction.

In summary, there are numerous challenges and opportunities to accelerate project delivery by improving the detailed design and construction phases. The majority of highway construction now takes place on existing facilities that are exposed to traffic; thus, improvements in safety, cost, and speedy delivery must go hand in hand.

Efforts are needed to reduce fragmentation and improve collaboration, concurrent processing, and team-based integration of processes, since these are so significant to achieving project delivery acceleration. Funding should be provided to promote “out of the box” thinking when it comes to new and innovative construction strategies fostered by SHRP2 and other research programs.

Opening the Door to Innovative Contracting and Public–Private Partnerships

Until relatively recently, the traditional design–bid–build approach to contracting for highway construction was virtually universal. It still remains pervasive, but the experimentation and innovation in contracting practices that has occurred over the past 10 years has been extraordinary, and it continues, offering significant opportunities for the acceleration of project delivery. This innovation and experimentation was made possible, in part, as a result of a Federal provision known as Special Experimental Projects (SEP) 14, which focuses on Innovative Contracting, permitting variations from the traditional approach on a case-by-case basis. It was SEP-14 that enabled the introduction of new approaches such as A + B (cost-plus-time) bidding, lane rental, and design-build, which have become state-of-the-practice tools for accelerating construction.

Perhaps the most significant provision of SEP-14 is that it allowed competitive construction submittals to be rated by the contracting agency on factors such as design quality, timeliness, management capability, and cost for the purpose of awarding the contract. This permitted the application of design-build contracting for the first time in the United States,

in which the contract could be awarded based upon what is characterized as “best value” rather than the lowest bid. This program also opened the door for an array of variations in contracting methods, as well as for the private sector to play a partnership role in terms of sharing risks and providing financial resources.

There is widespread acceptance that design-build and the many variations of innovative contracting that continue to evolve have the potential to (and frequently do) save a significant amount of time. The essence of design-build is that the team responsible for construction has significant responsibility for design. Under SAFETEA-LU, and consistent with approaches common internationally, the team may well have some responsibilities for addressing planning and environmental issues as well, while the sponsoring agencies retain responsibility for defining policy objectives, performance requirements, and the environmental phase record of decision.

A more recent FHWA provision issued in 2004, SEP-15 (“Explore Alternative and Innovative Approaches to the Overall Project Development Process”) transcends SEP-14 toward more proactive fostering of public–private partnerships (PPPs) and earlier involvement of private-sector teams to assist with environmental requirements, right-of-way acquisition, and project finance. Although debates continue over various arrangements for private-sector involvement in financing improvements, leasing, and long-term operational management, many of the innovative contracting methods employed under PPPs are available under more conventional funding.

As private-sector investment in transportation increases, it is likely that the private sector will take on an increasing role not only in operations and maintenance, but also in project development. The increasing role of private partners in project development—including the NEPA process—will require a re-thinking of traditional roles. Currently, most Federal and state regulatory requirements that apply to the letting and construction of transportation projects were established primarily for the design–bid–build process. Thus, as we explore newer project delivery methods, these traditional requirements must be reviewed to determine their applicability in new procurement environments.

FHWA has begun to address these issues by encouraging flexibility on an experimental basis under SEP-15, including flexibility in the environmental review process.

There have been numerous initiatives among the United States and state DOTs to develop, test, and implement proven innovations in contracting and in enhancing the role of the private sector in project delivery. These include:

- Contract incentives under the traditional design–bid–build delivery, such as:
 - Bonuses for early completion and penalties for delays;
 - Time-plus-cost bidding (known as A + B), in which projects are awarded on the basis of low cost and time to complete;
 - Lane rentals, in which the time required for travel lanes taken out of service are charged a fee; and
 - “No-excuse” contracts, which do not allow contractors extra time for poor weather.
- Design-Build, which provides for design and construction to be performed under one contract, thus allowing construction to begin before all design details are finalized. Because both design and construction are performed under the same contract, claims for design errors or construction delays due to design errors are not allowed and the potential for other types of claims is greatly reduced.

Over half the states have used design-build contracting, either on pilot projects or as an accepted practice on selected projects. However, even among the most active states that have used design-build—Arizona, Colorado, Florida, Utah—design-bid-build remains the more commonly used form of contracting. In a number of states, design-build for highways is not permitted under current procurement laws and regulations. In many of these states, small contractors and transportation agencies that are less inclined to cede control of the project to private-sector design-build teams (most often led by large construction contractors) have remained unconvinced of the potential benefits

Pennsylvania Stages Design-Build Comeback for 27 Bridges

In late June 2006, a severe flood event with up to 15 inches of rainfall in Northeast Pennsylvania resulted in extensive damage to 27 bridges. The Federal Highway Administration approved PennDOT's request to utilize a modified Design-Build Modified Turnkey process to expedite design and construction of the bridges. Waivers were granted by FHWA as follows:

- Allow preliminary design consultants to be “assigned” projects rather than through the conventional selection process. This allowed commencement of preliminary design within 11 days after the flood event.
- Allow full acquisition of right-of-way clearance to be performed by contractors during final design.
- Allow full utility clearance to be performed by contractors during final design.
- Allow environmental and waterway permitting to be completed by contractors during final design. Hydrologic and hydraulic analyses were completed during preliminary design, and conditional approval was obtained from the permitting agencies.

As a result of this modified design process, all 27 bridges totaling approximately \$47 million in construction contracts were awarded to nine contractors within two months following the flood event. Six of the replacement bridges were opened to the traveling public, in part or full, by the end of November, just 5 months following the flood event. All other bridges are on various schedules to meet replacement commitments.

- **Best Value Selection.** Best value selection is common to many alternative delivery systems and is strongly promoted by many advocates of design-build. Many states have awarded construction contracts based on a combination of price and “other factors,” which can include a wide variety of factors such as time to complete the job, effectiveness of the detailed design in meeting specified requirements, traffic management phases, and approaches to collaboration. These contracts often use a weighted scoring system that accounts for both the price and the technical qualifications of the proposals to determine the “best value” for the public.
- **Public-Private Partnerships (PPPs).** PPPs are contractual agreements between a public agency and private-sector entity that allow for greater private-sector participation in

the delivery of transportation projects. The private sector may serve in varying roles as financier, program manager, long-term lessee, toll revenue collector, and facility operations and maintenance manager.

Traditionally, private-sector participation has been limited to separate planning, design, or construction contracts on a “fee-for-service” basis, based on the public agency’s specifications. Expanding the private-sector role allows public agencies to tap into private-sector technical, management, and financial resources in new ways to achieve public agency objectives such as greater cost and schedule certainty, supplementing in-house staff, innovative technology applications, specialized expertise, or access to private capital. In return, the private partner can expand its business opportunities for assuming the new or expanded responsibilities and risks.

PPPs tend to accelerate project delivery in two ways: first, by enlarging the overall pool of funds being invested in transportation, thereby getting projects done sooner than they otherwise would; and second, by employing innovative contracting techniques to compress the time to ribbon cutting (as well as the time to initiating toll collections). PPPs in which existing roads are leased for a long-term period (anywhere from 40 to 75 years) in exchange for a large, up-front, lump-sum payment, can serve to accelerate projects into construction if the proceeds are re-invested into transportation programs.

Over 20 states and one territory have enacted statutes that enable the use of various PPP approaches for the development of transportation infrastructure. With the continued solvency of traditional transportation funding sources currently in question, new partnerships must be sought out to ensure that the investment in our infrastructure continues to provide the benefits needed to drive the U.S. economy.

- **Emergency Construction and Lessons Learned.** Periodically, a natural or man-made disaster will close down a vitally important transportation artery. Recent examples of these disasters include earthquakes and tanker trucks in California, hurricanes in Mississippi and Louisiana, and bridge spans hit by ships and trains in Florida and Oklahoma. It is extraordinary how fast procurement, permitting, prefabrication, and placement of construction elements and material can occur under a bona fide emergency. There are valuable lessons to be learned from these emergency responses that may well be applicable to accelerating schedules on more routine projects.

Escambia Bay Bridge Replacement a Streamlining Success

Innovative project management allowed for the streamlining of two distinct processes. All of the requirements and integrity of the NEPA process were employed and maintained while the RFP was under development. Since the success of the project timeline depended on the expeditious settlement of the NEPA process, team members gave great attention to early and often coordination with all agencies (resource and regulatory). Information gathered through the NEPA process was immediately included in the RFP, to the satisfaction of all parties. Concurrent activities allowed for the timely delivery of both the NEPA documents and the contract documents. The project was advertised while in the midst of the NEPA process. Prospective design-build firms were not only allowed, but greatly encouraged to attend all NEPA coordination and public meetings.

Hurricane Ivan Made Landfall	09/16/2004
NEPA Process Begins	10/05/2004
Project Advertised for Letters of Interest	12/21/2004
Shortlist of Design-Build Firms	01/10/2005
Public Information Workshop	02/03/2005
VE Study Completed	02/10/2005
NEPA Completed	02/11/2005
RFP Approved by FHWA and Issued	02/16/2005
Design-Build Contract Executed	04/20/2005

Innovative Delivery

SEP-15 was investigated to provide means for FDOT to explore alternative and innovative approaches to the overall project development process. Given the magnitude and urgency of the project, the SEP-15 concept was developed around an innovative approach to minimize the timeline required to develop the environmental documents, obtain the necessary approvals, and to award a design-build contract upon completion of the NEPA process and ultimately replace the I-10 Escambia Bay Bridges.

Expedited Environmental Process/Permitting

The Efficient Transportation Decision Making (ETDM) process was employed from the outset and greatly assisted in maintaining the rigid project schedule. Not only were all resource and regulatory agencies involved every step of the way, but the prospective design build team members were allowed to be involved. A multi-agency coordination meeting was held early in the RFP development process (12/17/2004) (concurrent with fulfillment of NEPA requirements). All affected/interested regulatory and resource agencies attended and provided specific input related to their respective interests. Permitting requirements and environmental commitments were specifically stated in the RFP. However, specific permitting requirements contingent upon the design-build firm's approach to the project were required of the design-build firm.

Overlap of Phases That Are Traditionally Sequential

RFP development began immediately upon FHWA's determination to replace the damaged bridge structures. Concurrently, logical project termini were established, and environmental surveys of essential fish habitat, seagrass beds, and contamination were conducted in close coordination with regulatory and resource agencies. As soon as commitments were made, they were incorporated into the RFP. The project was advertised for letters of interest (LOI) (12/21/2004) and three design-build firms were shortlisted (01/10/2005) prior to completion of the NEPA process (02/11/2005). In addition, the required value engineering study was conducted and completed by FDOT the week of 02/7/2005–02/10/2005. Upon completion of the NEPA process and location design concept acceptance provided by FHWA, the RFP was issued to the three shortlisted design-build

firms (02/16/2005). In one month, FDOT held the pre-proposal meeting, solicited and responded to technical questions, reviewed and scored technical proposals, facilitated project presentations and Q&A sessions, received price proposals, and awarded the design-build contract.

Types of Funding Utilized to Expedite Project Delivery

A mix of Federal and state funds were utilized to expedite project delivery. For example, sampling and testing of potentially contaminated materials (lead-based paint, asbestos-containing bridge elements, and existing contamination of the bottom of Escambia Bay) were acquired through an existing state contract. The results of said sampling and testing were quickly obtained and special requirements incorporated into the final RFP.

Proposed Regulation Hampers Design-Build Contracting

Although design-build has not spread as quickly among the states as some predicted, over half of the states have authority to use it and have, in fact, applied it. The use of design-build continues to grow for large and complex projects as its ability to share risks, foster innovation, and deliver projects on a fast track becomes more accepted.

SAFETEA-LU required FHWA to revise its regulations in order to allow a design-build contract to be awarded and “preliminary design” to occur prior to completion of the NEPA process. The previous regulations required NEPA and design-build contracting to occur sequentially. The changes proposed by FHWA in mid-2006 allowed design-build contracts awarded prior to completing NEPA, but defined the concept of “preliminary design” so narrowly that it actually would have severely reduced the flexibility that currently exists in the NEPA process. Rather than expediting project delivery, the proposed regulations would have created new barriers that slow it down. AASHTO, joined by more than 20 individual state DOTs, filed comments urging FHWA to adopt a more inclusive definition of “preliminary engineering.” This issue warrants close attention from the Commission. If the needed changes are not made, this issue may again become a subject for legislation.

Contracting Innovations Beyond Design-Build

While design-build is likely to remain the preferred alternative to design-bid-build, the inherent limitations of design-build are spawning interest in further innovations. While there are numerous variations, they have more in common than not. Without exception, they foster collaboration between designer and contractor—some, such as design-build, result in the contractor having the lead role, while in other cases the designer may have the lead role early and that lead may shift even as the composition of the team remains generally the same from one phase to the next. These approaches involve varying degrees of collaboration and sharing of risks with the owner, finding ways to assign risks to those in the best position to manage or mitigate them. They may also offer financial incentives in the form of bonuses or better margins when time and costs are controlled, and engineering and construction are more efficient, which stimulates innovation.

The examples below include newer contracting approaches and contracting provisions that could be considered as possibilities for further consideration and experimentation in the United States:

- **Alliance Contracting.** Used in Australia in the mining and transportation industries, Alliance Contracting involves intensive collaboration among the owner, designer, and contractor who agree to form a relationship in which they function as a partnership. Built on a “trust but verify” mentality, the designer and contractor who are teamed disclose all of their costs and margins using “open book accounting.” The financial, management, and technical ground rules are agreed to up front, and a joint board of senior executives remains actively engaged in oversight. Savings as well as overruns are shared among all parties, who generally view themselves as sitting on the same side of the table. This approach is particularly useful where a project is very large and complex, and where risks and uncertainties will remain significant, even during construction.
- **Early Contractor Involvement (ECI) and Target Pricing.** Developed and being applied by the Highways Agency in the United Kingdom, Early Contractor Involvement brings the contractor/designer team into a project in its conceptual stages, serving in a consultant role, and working with the owner and stakeholders to develop an agreed upon solution at a target price. The target scope, price, and schedule are independently reviewed and verified by the owner and become the basis for the second phase in which the team’s role shifts to one of implementation of the project at a guaranteed price. The team accepts the risk of overruns and gains the benefit of savings.
- **Construction Manager at Risk or Construction Manager/General Contractor (CM/GC).** Similar to ECI, Construction Manager at Risk, or Construction Manager/General Contractor migrated from the vertical construction industry. This approach is being tried by a few DOTs such as Arizona, Florida, Michigan, and Oregon. A design/construction management team is selected to provide construction expertise and contract management, including a target cost for construction and an estimated ceiling price. The team, in a consultant role, also provides preconstruction advice to the owner concerning constructability, pricing, scheduling, staging, value engineering, and other areas related to the construction of the project. Some owners favor this contracting technique as it gives them greater control of the design process, yet it still provides for innovation and constructability recommendations in the design phase. Assuming the price is agreeable and working relationships were satisfactory in the early concept stage, the project shifts to the next stage in which the project team serves as general contractor with a contractual responsibility and associated risks to deliver the project within the guaranteed price.

In general, innovative contracting remains the exception to the rule, but it is likely to grow. The benefits of accelerating schedules, promoting innovation, and sharing risks have spawned interest among the transportation agencies in a growing array of delivery systems. Many innovative contracting techniques have been in use for some time in vertical construction, while others have been adapted from overseas contracting methods. These contracting approaches vary in terms of the degree of collaboration and risk sharing among owner, contractor, and designer, and also in terms of how early in the overall process they are initiated—particularly in terms of planning and environmental assessments and mitigation. However, it is expected that these variations from design-build will grow as DOTs continue to seek more and better tools to share and manage risk in terms of quality, scope, costs, and schedule.

Overall, the seemingly perennial need to deliver more with less, and to do it faster continues to sustain interest in Innovative Contracting and Public–Private Partnerships. Very recent events within states such as Texas and Pennsylvania, as well as questions raised about the national public interest by members of Congress, demonstrate that PPPs are likely to remain a subject of debate. What is not often debated is the track record of accelerated project delivery that is a key benefit of PPPs. PPPs always employ a collaborative form of innovative contracting, most often design-build, which as a minimum integrate detailed design and construction, and in virtually all instances demonstrate an ability to achieve significant schedule acceleration.

Recommendations: Innovative Contracting Techniques

- ***Innovative contracting techniques should be encouraged to assist in the timely procurement and management of transportation projects. “Mainstreaming” these contracting techniques and lifting restrictions on their use—such as allowing expanded use of warranties on projects, which are currently limited in scope by Federal regulation—will allow for increased experimentation and evaluation regarding how they work in differing circumstances.***
 - ***Regulatory changes recently proposed by FHWA regarding the concept of “preliminary design” in the design-build process, are defined so narrowly that they would severely reduce the flexibility that currently exists in the NEPA process. Rather the expediting project delivery, the proposed regulations would create new barriers that slow it down. The proposed regulations should be revised.***
 - ***The use of SEP-15 should be encouraged to expand opportunities for private-sector participation in project development, while at the same time establishing clear boundaries to ensure that public agencies remain accountable to the public for transportation decisions.***
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