Federal Highway Administration

Every Day Counts

Innovation Initiative

Message from the Administrator

Our society and our industry face an unprecedented list of challenges. Because of our economy, we need to work more efficiently. The public wants greater accountability in how we spend their money. We need to find ways to make our roads safer. And we have an obligation to help preserve our planet for future generations.

But it's not enough to simply address those challenges. We need to do it with a new sense of urgency. It's that quality—urgency—that I've tried to capture in our initiative, Every Day Counts (EDC).

EDC is designed to identify and deploy innovation aimed at shortening project delivery, enhancing the safety of our roadways, and protecting the environment.

These goals are worth pursuing for their own sake. But in challenging times, it's imperative we pursue better, faster, and smarter ways of doing business.

EDC is designed to focus on a finite set of initiatives. Teams from the Federal Highway Administration will work with our state, local, and industry partners to deploy the initiatives and will develop performance measures to gauge their success.

The first round of initiatives described in the following pages represent what I hope will lead to a sea change in the way we deploy innovation. As you see represented in the EDC logo, our industry is shaped by invention, ingenuity, imagination, and innovation. These words are not new to the transportation community's lexicon. They've always been at the heart of our work.

But under Every Day Counts, I want to see us work together to bring more focus and commitment to those qualities, and to the rapid deployment of proven solutions and technologies that make a difference. The traveling public deserves no less.

Secretary LaHood has set the bar high at USDOT. He not only expects us to think innovatively, he understands the times demand it. Every Day Counts is FHWA's effort to provide National leadership in the quest to meet the transportation demands of the 21st Century.

Victor Mendez
FHWA Administrator

EDC Initiatives

We've organized EDC around three pillars. One is an internal effort to make FHWA a greener Agency and reduce our carbon footprint. The other two are directly related to our work as stewards of America's highway system:

Accelerating Technology and Innovation Deployment

Every Day Counts is not about inventing the next "big thing." It's about taking effective, proven and market-ready technologies and getting them into widespread use. By advancing 21st century solutions, we can improve safety, reduce congestion and keep America moving and competitive.

Shortening Project Delivery

The sooner we can deliver projects, the sooner the public can enjoy their benefits. To deliver projects more quickly, FHWA will help the highway community make routine use of innovative practices. We've put together a toolkit that includes ideas for using flexibilities in the law and not duplicating efforts in the planning and environmental review process. We are also recommending that States make innovative contracting practices the standard way of doing business.

Accelerating Technology and Innovation Deployment

Warm Mix Asphalt

Warm-Mix Asphalt (WMA) is the generic term for a variety of technologies that allow asphalt to be produced and then placed on the road of at lower temperatures than the conventional hot-mix method. WMA production is at temperatures ranging from 30 to 120 degrees lower than hot mix. In most cases, the lower temperatures result in significant cost savings and reduced greenhouse gas emissions because less fuel is required. WMA also has the potential to extend the construction season, allowing projects to be delivered faster. By 2009, more than 40 States constructed WMA projects, with 14 adopting specifications to accommodate WMA.

Prefabricated Bridge Elements and Systems

With Prefabricated Bridge Elements and Systems (PBES), many time-consuming construction tasks no longer need to be done sequentially in work zones. An old bridge can be demolished while the new bridge elements are built at the same time off-site, then brought to the project location ready to erect. Because PBES are usually fabricated under controlled climate conditions, weather has less impact on the quality, safety, and duration of the project. The use of PBES also offers cost savings in both small and large projects. The ability to rapidly install PBES onsite can reduce the environmental impact of bridge construction in environmentally sensitive areas.

Adaptive Signal Control Technology

Poor traffic signal timing contributes to traffic congestion and delay. Conventional signal systems use pre-programmed, daily signal timing schedules. Adaptive signal control technology adjusts the timing of red, yellow and green lights to accommodate changing traffic patterns and ease traffic congestion. The main benefits of adaptive signal control technology over conventional signal systems are that it can:

- Continuously distribute green light time equitably for all traffic movements.
- Improve travel time reliability by progressively moving vehicles through green lights.
- Reduce congestion by creating smoother flow.
- Prolong the effectiveness of traffic signal timing.

Adaptive Control Software Lite (ACS-Lite) is an example of adaptive signal control technology. ACS-Lite was specifically designed to be deployed using conventional control equipment, communications, and traffic sensors on arterial streets, making it a cost-effective alternative to other signal timing adjustment technologies.

Safety Edge

The Safety Edge is a simple but extremely effective solution that can help save lives by allowing drivers who stray off highways to return to the road safely. Instead of a vertical drop-off, the Safety Edge shapes the edge of the pavement to 30 degrees. Research has shown this is the optimal angle to allow drivers to re-enter the roadway safely.

The asphalt Safety Edge provides a strong, durable transition even for vehicles that are particularly vulnerable, such as smaller, lighter cars. Even at higher speeds, vehicles can return to the paved road smoothly and easily. FHWA's goal is to accelerate the use of the Safety Edge technology, working with States to develop specifications and adopt this pavement edge treatment as a standard practice on all new and resurfacing pavement projects.

Geosynthetic Reinforced Soil

Instead of conventional bridge support technology, Geosynthetic Reinforced Soil (GRS) Integrated Bridge System (IBS) technology uses alternating layers of compacted granular fill material and fabric sheets of geotextile reinforcement to provide support for the bridge. GRS also provides a smooth transition from the bridge onto the roadway, and alleviates the "bump at the bridge" problem caused by uneven settlement between the bridge and approaching roadway. The technology offers unique advantages in the construction of small bridges, including:

- Reduced construction time and cost, with costs reduced 25 to 60 percent from conventional construction methods.
- Easy to build with common equipment and materials; easy to maintain because of fewer parts.
- Flexible design that's easily modified in the field for unforeseen site conditions, including unfavorable weather conditions.

Shortening Project Delivery Toolkit

It's a commonly held perception that it takes an average of 13 years to deliver a major highway project from planning through completion. This toolkit presents approaches for improving project delivery times by addressing what we've identified as a number of frequently cited problem areas. FHWA is prepared to play an active leadership role in helping the people who actually deliver projects—States, MPOs, contractors—understand and accept the new practices and new technologies.

The first three initiatives below attempt to eliminate time-consuming duplication of effort.

Planning and Environmental Linkages

This initiative will set up a framework for considering and incorporating planning documents and decisions from the earliest stages of project planning into the environmental review process. It represents an approach to transportation decisionmaking that takes environmental, community, and economic information collected early in the planning stage and carries it through project development, design, and construction. This can lead to a seamless decisionmaking process that minimizes duplication of effort, promotes environmental stewardship, and reduces delays in project implementation.

Legal Sufficiency Enhancements

Decisions made early in planning and project development are often the root causes of problems identified later in the environmental review process when NEPA and Section 4(f) documents undergo legal scrutiny. Consultation with FHWA environmental attorneys at early decision points can help decision-makers avoid problems later, saving time and costs. This initiative will also identify the most common problems in document development, their root causes, and the measures preparers can take to avoid the problems.

Expanding Use of Programmatic Agreements

The continued and expanded use of programmatic agreements (PAs), where procedures have been standardized and agreed upon, has been very effective in saving time. When prior agreements exist for avoiding, minimizing, and mitigating impacts, projects are reviewed quicker and trust is developed that results in improved relationships between DOTs and regulatory agencies. The goal of this initiative is to identify and assist in the expansion of new and existing programmatic agreements to a regional or national level.

The next five initiatives encourage the use of existing regulatory flexibilities.

Use of In-Lieu Fee and Mitigation Banking

In projects that will impact waters of the United States (wetlands, for example), the permitting process under Section 404 of the Clean Water Act currently constitutes a major component of the project development and delivery process. This initiative proposes expanded use of in-lieu fees and mitigation banking currently allowed under existing statute, FHWA regulations, State law, and court decisions in order to save time and expedite project delivery.

Clarifying the Scope of Preliminary Design

This initiative will identify the amount of design work allowable under current law prior to NEPA completion regardless of contracting mechanism, and develop guidance to allow this work to be done consistently.

Flexibilities in Right of Way

The Right of Way (ROW) process is currently a major part of the project development process. Significant time savings can be achieved by employing flexibilities already provided for in statute and FHWA regulations. This initiative will underline opportunities for improved coordination of ROW activities with other key project development actions in preliminary design; land acquisition for utilities accommodation and relocation project activities; NEPA mitigation land needs; and a number of other areas where streamlined approaches may prove beneficial. The proposed initiative deals only with flexibilities allowed under existing regulations and statutes. Legislative changes required for additional flexibilities will need to be addressed separately.

Flexibilities in Utility Accommodation and Relocation

The often-conflicting priorities of State transportation agencies and utility companies can adversely affect the timely completion of transportation projects. Potential utility conflicts exist on most transportation projects. It is estimated that half of all highway and bridge projects eligible for Federal funding involve the relocation of utility facilities, and construction generally takes longer and costs more when utilities need to be relocated. The initiative will spotlight existing flexibilities currently in place under Federal law and regulations and describe techniques that foster effective utility coordination during project development which warrant more widespread use.

Enhanced Technical Assistance on Delayed EISs

This initiative will provide additional FHWA technical assistance to identify major challenges on ongoing Environmental Impact Statement projects and implement solutions to resolve project delays where feasible. Candidate projects would ideally be those where 60 months have elapsed since issuance of the Notice of Intent (NOI) without issuance of a Record of Decision (ROD). FHWA teams will focus on facilitating interagency coordination and collaboration to resolve outstanding issues and provide peer-to-peer activities, workshops, training, or specialized on-site assistance.

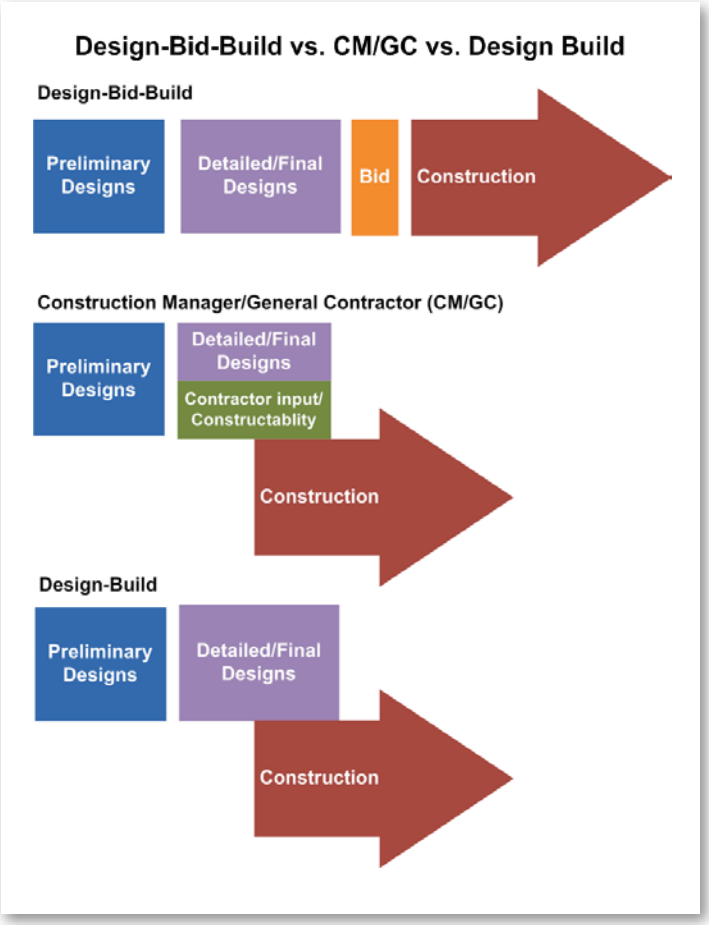
Accelerated Project Delivery Methods

The next two initiatives focus on the construction phase of a project.

Design Build

Traditionally, a project is designed, put out for bid to construction firms, then built by the winning bidder (design-bid-build). Design-Build (DB) is an alternate method of project delivery in which the design and construction phases are combined into one contract, eliminating the separate bid phase and allowing certain aspects of design and construction to take place at the same time. This can provide significant time savings compared with the design-bid-build approach, where the design and construction phases must take place in sequence.

With DB project delivery, the designer-builder assumes responsibility for the majority of the design work and all construction activities. This provides the designer-builder with increased flexibility to be innovative, along with greater responsibility and risk.



In addition to the time savings, a DB contract provides savings in cost and improvement in quality. Cost savings are realized by transferring many of the construction engineering and inspection costs from the contracting agency to the designer-builder. The arrangement also results in fewer change orders or claims for errors or delays. Finally, the ongoing involvement of the design team throughout the process puts a greater focus on quality control and assurance, and allows better coordination between the needs of the project and the contractor's capabilities.

Construction Manager/General Contractor

Construction Manager/General Contractor (CM/GC) occupies the middle ground between the traditional design-bid-build and design-build. In a typical CM/GC scenario, the owners of a project hire either a general contractor or design firm to serve as the construction manager, placing responsibility for design review, design modifications, system integration, and construction with that single contractor. CM/GC allows State DOTs to remain active in the design process while assigning risks to the parties most able to mitigate them. As with the design-build approach, there are potential time savings because of the ability to undertake a number of activities concurrently.

Additional benefits include:

- Increased partnership and team building fosters an environment where innovation can be nurtured, be rewarded, and flourish.
- Owner has control over design details as a member of the design team.
- Potential for lower project costs, primarily due to risk identification and allocation during early project development.
- Enhanced cost certainty at an earlier point in design because of real time costing information inherent to CM/GC.
- Value engineering savings accrue to owner. The number of change orders, which are indicators of design quality, is also low.

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