Highways for LIFE

National studies show that many motorists in some of our nation's largest urban areas are spending the equivalent of one whole workweek -- 40 hours -- simply stuck in traffic. This is a significant waste of time and money, costing the average motorist over $1,000 each year. The wasted fuel from millions of idling vehicles also contributes to the pollution of our air. Ironically, building more roads and bridges to reduce such congestion often has the opposite effect -- of making congestion worse while construction is underway.

What if road crews could find ways to accelerate their work, causing fewer motorist delays, while at the same time building new roads and bridges of such superior quality they would last twice as long as today's typical highway project?

This vision is not unattainable – it's happening right now. When a disaster has required extraordinary effort to get a major transportation facility back in service, the owners and industry have risen to the occasion. For example:

- Loma Prieta Earthquake – CA
- I-40 Bridge Collapse at Webbers Falls – OK
- Queen Isabella Causeway Collapse – TX

These and other exceptional efforts have demonstrated the tremendous potential of the highway community, and the technology and practices available to us. Accelerated construction techniques can dramatically reduce the time the public has to spend driving through work zones. Use of manufacturing processes or prefabricated components can expedite the on-site phase of construction, improve the quality of the end product~~,~~ and reduce the exposure of both the construction forces and the traveling public to the hazards of the work zone. Innovative contracting approaches can streamline the front-end efforts and promote quality in highway infrastructure. However, high standards and expectations are needed to drive widespread adoption of these innovations and technologies.

Highways for LIFE[1] is an integrated approach to the highway construction process with three strategic goals

- Improved safety
- Reduced congestion due to construction
- Improved quality

The Highways for LIFE goals will be achieved through:

- Demonstration projects built under high standards for quality and performance
- An extensive program of technology transfer, education and evaluation; and
- Industry partnerships to encourage more extensive integration of beneficial technologies in highway construction equipment, materials, processes and practices

[1] LIFE is an acronym for **L**ong lasting highways using **I**nnovative technologies and practices to accomplish **F**ast construction of **E**fficient and safe pavements and bridges.

Funding for Highways for LIFE is included in the Administration's $247 billion reauthorization proposal. A $1 billion dollar investment over the life of the new bill is proposed as part of spending down the balance of the highway trust fund. Highways for LIFE will advance the state-of-the-practice in highway construction by demonstrating and promoting the adoption and use of the best available technologies and contracting practices.

Why should you support Highways for LIFE?

Current highway construction practices and the evolutionary rate at which they change affect our nation in several ways. Between 1997 and 2001, the loss of human life attributable to highway construction work zones increased from 693 to 1,079. In 2001, highway construction work zones resulted in an average of 2.6 hours of delay per driver, with substantial economic and environmental costs. On the 140,000-mile National Highway System, 11,000 miles of pavement are in poor condition and more than 24,000 bridges are classified as "deficient." These deficiencies are themselves an impediment to safe, efficient and reliable transportation.

Improving the overall condition of our Nation's highway system using current practices, technologies~~,~~ and revenue streams is a daunting task. We can afford neither the costs associated with a deficient highway system, nor the costs in congestion and human life associated with perpetuating current practices. If we continue to do what we've always done, we'll only get more of the same, and that is simply not good enough. Clearly, there needs to be a better, safer, smarter approach to building highways.

How will Industry benefit from Highways for Life?

Highways for LIFE will offer….

- A safer working environment for employees – fewer worksite accidents, fewer motor vehicle crashes - through reduced work zone exposure.
- Opportunities to develop partnerships, open up new markets for innovative materials, and foster new approaches in construction methods and technology.
- A unique opportunity to set a new standard for highway construction, to reward innovation, and challenge the industry to approach highway construction in ways that are better, safer, and smarter.

How will Highways for LIFE operate?

Both the highway users and the highway community will be involved in ~~the~~ determining how the objectives of Highways for LIFE will be achieved. The Highways for LIFE Alliance [NOTE: What's the latest on the Alliance?] will provide a forum through which the State and local transportation agencies~~Departments of Transportation (DOTs)~~, private sector consultants, material suppliers, equipment manufacturers, highway users and contractors can provide advice on the structure and conduct of Highways for LIFE, and input on technologies, performance standards~~,~~ and business practices.

How does Highways for LIFE differ from conventional construction?

Projects using conventional construction methods take years, present safety hazards, delay traffic and do not always produce a long~~-~~-lasting product. Highways for LIFE construction differs from conventional construction in that it utilizes proven best practices, technologies and innovations to reduce on-site construction time, attain higher quality and improved safety. The Highways for LIFE performance standards will establish elevated goals for safety, construction-related congestion and quality of workmanship. Highways for LIFE will also provide a toolbox of approaches and technologies to assist the highway owners and builders in reaching the performance standards.

Some examples of how Highways for LIFE technologies and innovations are being used…

Mitchell Gulch Bridge, Denver, Colorado		
	Conventional Construction	**Highways for LIFE**
Technology	• Cast-in-place • Assembled on site	• **Prefabricated** • **Pre-assembled**
Process	Design-bid-build	**Value engineering**
Time of Construction	60 days (estimated)	**2 days (actual)**
Summary	• *Time of construction reduced 97%* • *Initial construction cost savings of a "couple of thousand dollars"*	

1.7- mile segment of Interstate 10, Pomona, California		
	Conventional Construction	**Highways for LIFE**
Technology	4-hour strength concrete	**4-hour strength concrete**
Process	• Design-bid-build • Limited outreach	• **Incentives/disincentives** • **Extensive outreach to inform public of closure**
Time of Construction	16 night-time closures of 7-10 hours (estimated)	**One 55-hour weekend closure (actual)**
Summary	• *Time of closure reduced 51% to 66%* • *Duration of construction reduced 81%*	

Expansion of 120 miles of New Mexico 44 from two to four lanes		
	Conventional Construction	**Highways for LIFE**
Process	Design-bid-build	**Design-build**
Time of Construction	27 years (estimated)	**3 years (actual)**
Cost of Construction	$261 million (estimated)	**$252 million (actual)**
20--yr. maintenance cost	$151 million (estimated)	**$62 million (warranteed)**
Summary	• Time of construction reduced 89% (24 years!) • Cost savings of $98 million over first 20 years of service	

I-95 Bridges over the James River ~~Bridges~~, Richmond, Virginia (Superstructure replacement and substructure rehabilitation of twin 4,184' bridges)		
	Conventional Construction	**Highways for LIFE**
Technology	• Cast-in-place construction • Typical concrete	• **Prefabricated and assembled composite units** • **High-performance concrete**
Process	Design-bid-build	**A + B contracting with incentive/disincentive**
Time of Construction	36 Months (estimated)	**7 Months (actual)**
Cost of Construction	$43.7 M (estimated)	**$38.6 M (estimated)**
Summary	• *Time of construction reduced 81% (29 months)* • *Initial construction cost savings of 12% ($5.1 million)*	