



Priority, Market-Ready Technologies and Innovations

Accelerated Construction

Problem: An aging system faces increasing traffic demand

Highway construction has intensified in recent years to address two challenges. First, the Nation's highway infrastructure is aging, because much of it was built during the 1950s and 1960s and needs to be rehabilitated or replaced. Second, although highway capacity has remained virtually unchanged during the past several decades, traffic demand has increased tremendously, causing high levels of congestion. Large construction projects to improve outdated roads and bridges compound traffic problems during extensive construction periods. Today's motorists demand high quality roads, but they want them put in place as quickly as possible; they will not settle for a "business as usual" approach.

Putting It in Perspective

Increasing demand (1980–2000):

- Vehicle miles of travel increased by 80 percent.
- Licensed drivers increased by 31 percent.
- Lane miles increased by only 3.8 percent.

An aging system:

- Forty percent of all bridges are more than 40 years old.
- When these bridges were constructed, design life was often only 50 years.
- Most pavement designs have a 20-year life expectancy.

Solution: Accelerated Construction Technology Transfer (ACTT) effectively reduces construction time while enhancing quality and safety on highways

ACTT aims to reduce construction time dramatically, saving money and improving safety and quality by minimizing the delays and hazards associated with work zones.

What is ACTT?

ACTT is a strategic process that uses various innovative techniques, strategies, and technologies to minimize actual construction time, while enhancing quality and safety on today's large, complex multiphase projects. Sponsored by the American Association of State Highway and Transportation Officials' (AASHTO) Technology Implementation Group (TIG) and the Federal Highway Administration (FHWA), the ACTT process begins with a 2-day workshop in which a multidisciplinary team of 20–30 national transportation experts works with an equal number of their local counterparts to evaluate all aspects of a project and develop recommendations for reducing construction time and enhancing safety and quality.

Key to the success is a team of experts working together in a coordinated, strategic approach to ensure that the project is completed better, faster, and safer. ACTT skill sets include:

- Right-of-way/utilities/railroad.
- Traffic engineering/safety/intelligent transportation systems.
- Structures.
- Innovative financing and contracting.
- Worker health and safety.

- Geotechnical/materials/accelerated testing.
- Long-life pavements/maintenance.
- Construction (techniques, automation, constructability).
- Environment/contest sensitive design.
- Roadway design/geometries.
- Public relations.

Benefits

- Reduces construction time.
- Mitigates congestion.
- Improves safety and quality.

Workshop recommendations for accelerating the project included using design-build contracting; coordinating with utility companies early in the project planning process; using long-life pavements with a 50-year design lifespan; improving general materials specifications; establishing a dedicated incident management system at the project site; and introducing various traffic flow strategies. The goal of the accelerated construction plan is to complete the \$760 million project in 4 years—3 years earlier than the original estimate.

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Successful Applications: ACTT workshops and Project Pegasus

Transportation Research Board Task Force A5T60 was formed in 1999 to promote accelerated construction in the highway infrastructure. In 2002, the task force completed two ACTT pilot workshops in Indiana and Pennsylvania. AASHTO-TIG and FHWA are continuing the effort, and workshops in Texas, Louisiana, and California were conducted in 2003. Three to five annual workshops are planned for 2004 and 2005. Interest among State highway agencies has been very high, and six workshops already are scheduled for 2004.

In September 2003, the Texas Department of Transportation hosted an ACTT workshop on how to accelerate Project Pegasus, an initiative aimed at redesigning and improving the two major U.S. interstate freeways that serve downtown Dallas, TX—I-30 and I-35 East. The heavily congested freeways have outdated layouts. In many locations, ramps lack adequate acceleration or deceleration lengths, interchanges and ramps are too close together, and bridges have limited vertical and horizontal clearances, among other problems. The project requires weaving construction around railroad tracks, major employment sites, four city parks, and the Dealey Plaza historic district.