U.S. Department of Transportation
Federal Highway Administration

Priority, Market-Ready Technologies and Innovations

Accelerated Construction Technology Transfer (ACTT)

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 Large construction projects to improve outdated roads and bridges compound traffic problems during extensive construction periods.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 to 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.

Successful Applications: ACTT workshops and Project Pegasus

In 2002, Transportation Research Board (TRB) Task Force A5T60 completed two ACTT pilot workshops in Indiana and Pennsylvania. AASHTO-TIG and FHWA have continued the effort, conducting 10 workshops through the end of fiscal year 2004 in Texas, New Jersey, Louisiana, California, Montana, Washington State, Tennessee, Oklahoma, Minnesota, and Wyoming.

In September 2003, Texas Department of Transportation (DOT) hosted an ACTT workshop for its Project Pegasus to reconstruct the I–35E/I–30 interchange and portions of the two major freeways serving downtown Dallas. Workshop recommendations included constructing the Trinity Parkway first to be used as a detour during construction, allowing the contractor to build its plant onsite, improving general materials specifications, setting up a dedicated incident management system, and devising a number of traffic flow strategies. The goal is to complete the $760 million project in 4 years—3 years ahead of the original estimate.

An ACTT "mini-workshop" focused on New Jersey DOT's plans to improve a bridge on Bergen County's Rt. 46. As a result of ACTT recommendations, work to replace the bridge deck and floor beams is under design and expected to begin early next year. The work will take only 3 months and cost an estimated $3 million rather than the 18 months and $10 million originally expected, thanks to the use of precast elements, lightweight high-performance concrete, and fiber-reinforced polymer composites, thus reducing dead load and providing for use of existing substructure.

California DOT's (Caltrans) workshop examining the $75 million French Valley Parkway project on I-15 between Temecula and Murrieta produced recommendations including design modifications to eliminate two bridge structures, prefabrication of an entire bridge span, a dedicated incident management system, prequalification of material sources, and paving the median to serve as a detour during construction and to provide for future HOV lanes.

A Louisiana DOT workshop focused on the rehabilitation of a 40-year-old elevated section of I–20 in Monroe. Recommendations included completion of nearby projects beforehand to ease traffic flow, an aggressive incident management system with performance-based wrecker service, a smart work zone, and lane rental by the contractor for nightly closures of the mainline and certain ramps.

Montana DOT hosted an ACTT workshop in January 2004 for a $100 million upgrade of a 50-mile portion of US–93 north of Missoula, within the Flathead Indian Reservation, home of the Confederated Salish and Kootenai Tribes. Recommendations to reduce construction time from 5 to 3 years included prefabricated structural components installed at night, pre-approval of tribal borrow sites to minimize inspection time, and establishment of a corridor management and communication team.

Washington State DOT hosted a workshop for a project on SR–520 between I–5 and I–405 in Seattle that will include the replacement of a 40-year-old floating bridge across Lake Washington. The project will cost between $1.5 and $3.4 billion, the largest ACTT project so far. Recommendations aimed at reducing construction time by 1-2 years include use of Self Consolidating Concrete (SCC) and designing the simple pontoons first so construction may begin while the more complex pontoons are still being designed.

A Tennessee DOT workshop for a $160 million project on a 2-mile stretch of I–40 in Knoxville produced recommendations to reduce construction time and minimize socioeconomic impacts by adjusting bridge span lengths to avoid existing foundations, installing spread footings and/or pin pile foundation under the James White Parkway before demolition, and completing Hall of Fame Drive prior to closure of I–40.

For more information, contact:

Dan Sanayi, FHWA Office of Asset Management
Phone: 202–493–0551
E-mail: dan.sanayi@fhwa.dot.gov

Rob Elliott, FHWA Resource Center
Phone: 404-562-3941
E-mail: rob.elliott@fhwa.dot.gov

FHWA-HRT-04-157
HRTS-03/09-04(1M)E