January 2007

Accelerated Construction Technology Transfer

Building on Success

U.S. Department of Transportation
Federal Highway Administration

"Our materials have changed, and our construction practices have to change with them."

Jim Sorenson, Construction and System Preservation Team Leader
Federal Highway Administration (FHWA)
April 20, 2006

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ACTT NOW

The past year has been one of maturation and reflection for those involved with Accelerated Construction Technology Transfer (ACTT).

As the *Workshops at a Glance* table in this report illustrates, five departments of transportation (DOTs) conducted ACTT workshops over the past year. What the table doesn't capture, however, is the informal efforts that are occurring as ACTT becomes standard operating practice at DOTs nationwide. Rather than rely on anecdotal evidence, FHWA is 1) focusing on documented events, and 2) asking DOTs across the country to capture all ACTT events for the coming year.

Several DOTs have let projects that were analyzed using the ACTT process, and FHWA's Office of Asset Management has surveyed those agencies in order to capture successes and lessons learned for other DOTs. Those results, which are highlighted in this report, offer a glimpse of the many dividends this process yields, both for the transportation agencies involved and for the traveling public.

The sidebar on the opposite page highlights another joint construction effort, the Accelerated Bridge Construction (ABC) program. As this article demonstrates, FHWA and DOT staff across the country continue to seek out innovations in all aspects of their trade.

FHWA's goal is to track these – and all – accelerated construction activities and continue building on the programs' success to date.

HISTORY OF ACTT

The ACTT concept was originated by the Transportation Research Board (TRB) in conjunction with FHWA and the Technology Implementation Group (TIG) of the American Association of State Highway and Transportation Officials (AASHTO). Following the completion of two pilot workshops, one in Indiana and one in Pennsylvania, the originating task force, A5T60, passed the concept off to FHWA and TIG to continue the effort. They have done so by coordinating a series of ACTT workshops around the country. The publication of FHWA's ACTT Implementation Memorandum and accompanying 'How To' Guide in October 2005 brought the program to the next level by offering step-by-step guidance for States adopting ACTT as standard practice.

2006 ACCELERATED BRIDGE CONSTRUCTION (ABC) ACTIVITIES

FHWA'S Office of Bridge Technology, in partnership with State DOTs across the country, has conducted ABC workshops in Rhode Island, Utah, Florida, Montana, Oregon, Alabama, Virginia, New York and Pennsylvania. These one-day events provide information on how to accelerate construction and where to find additional information.

In addition, three State DOTs – Florida, Rhode Island and Minnesota – held ABC showcases over the past year.

The Florida DOT hosted a delegation of transportation officials from across the United States, South Korea and Canada at a conference held June 9-11, 2006, in DeLand, Florida. Participants learned more about the use of self propelled modular transporters (SPMTs) for bridge construction and observed the installation of the final span of the Graves Avenue Bridge.

The Rhode Island DOT showcased its use of SPMTs for the installation of the new Providence River Bridge. The bridge's arches were prefabricated at the former Quonset Point naval base a dozen miles away and transported to the bridge site via two barges. The Minnesota DOT (MnDOT) also held an ABC showcase, with more than 50 engineers participating in each event.

Information on FHWA's ABC program, including the program's decision-making framework and guidelines, is available online at http://www.fhwa.dot.gov/bridge/prefab/. An SPMT manual is being prepared and should be available shortly. In addition, FHWA is developing a catalog of connection details for prefabricated bridge systems. The projected completion date for the prefabricated bridge systems catalog is the summer of 2007, with a complete ABC design and construction manual following in 2008.

SUCCESSES AND LESSONS LEARNED

"The workshop incorporated people familiar with similar construction projects but without the predetermined limitations set by local communities and departments."

Marshall Hill
District Construction Engineer
Louisiana DOTD

As of the fall of 2006, six ACTT projects had reached or were approaching the letting/construction stage, with one job complete. Even though the scope of the projects varies greatly, all six States report either significant savings or vital lessons learned as a result of the ACTT process.

The Oklahoma Department of Transportation, for example, has realized an estimated $15.8 million in savings as a result of its ACTT workshop for the $360 million I-40 Crosstown project in Oklahoma City – and the project is still in the design phase! A breakdown of recommendations and the resulting savings is provided below:

Complete early geotech investigations. Early geotechnical investigations exposed a layer of questionable material in the vicinity of the depressed section of the Interstate. Adjustment of the proposed grade has produced approximately $10 million in savings due to reduced excavation costs, retaining wall changes and drainage system modifications.

Eliminate cast-in-place wall design. This has been incorporated in all possible areas. The change to mechanically stabilized earth (MSE) walls should produce a savings of approximately $1.5 million.

Use full closures and combine closures. Elimination of the Western Avenue detour will save approximately $1 million due to the length of the detour and the two at-grade railroad crossings that can be eliminated.

Have pre-established borrow sites. The department has been securing and stockpiling fill material as local conditions allowed. Additionally, cooperative efforts with the City of Oklahoma City have enabled the department to secure approximately 600,000 cubic yards of material from a city construction site. Cost savings should be in the range of $1.8 million.

Remove eastbound frontage road between Pennsylvania and Western. Removing this element should result in a savings of $1.5 to $2 million.

"This was a worthwhile and beneficial effort," says ODOT Project Development Engineer John Bowman. "The process was a well defined and structured process that does not need changing."

The Louisiana Department of Transportation and Development (DOTD) reports similar results. The DOTD awarded the contract for its I-20 Rehabilitation project in West Monroe in August 2005, and construction was completed in March 2006. According to District Construction Engineer Marshall Hill, the ACTT process offered a number of benefits to the DOTD, with the agency adopting several recommendations from the workshop:

- Use very early strength latex modified concrete.
- Use precast F-shaped fascia for barrier rail upgrades.
- Hydroblast and overlay one and a half inches without raising the road irons.
- Temporarily modify the geometrics on local adjacent roadways (Layton and Calypso) in order to detour two lanes of I-20 traffic for weekend and night closures.
- Develop a comprehensive public relations campaign.
- Incorporate innovative contract methods.
- Optimize the letting date.
- Utilize full bridge closures as much as possible.

"It was always our understanding that we had to add depth to the concrete," Hill says. The department hadn't utilized very early strength latex modified concrete in a number of years, so DOTD staff didn't realize it could be utilized in such an application. Those changes, along with an incentive to construct expeditiously, reduced the construction timeframe from 225 proposed to 125 actual days. The DOT was so pleased with the results that it recently held a mini-workshop for the upcoming extension of the West Monroe project.

According to their survey responses, both the Wyoming Department of Transportation (WYDOT) and the Tennessee Department of Transportation (TDOT) garnered comparable results from their ACTT workshops.

SUCCESSES AND LESSONS LEARNED Continued

Since WYDOT held a workshop for its US 287/26 Moran Jct.-DuBois project in September 2004, the agency has implemented recommendations from the construction, geotech, environment, and marketing/public relations groups on the two segments let to contract, and a number of recommendations are being explored for the segments still in the design phase. The only change Chief Engineer Keith Compton would suggest is a more focused approach so that WYDOT could receive even more detailed recommendations.

The major innovation adopted from TDOT's I-40 from I-275 to Cherry Street, Knoxville workshop pertains to the design of the signature bridge for the project, says TDOT Engineer Duane Manning. "The original design had intermediate bents or columns on either side of the roadway, and the final decision was to lengthen the spans, use caisson footings and limit the amount of work directly adjacent to the Interstate." This, in turn, shortened the construction timeframe and lessened the impacts on the traveling public.

The Montana Department of Transportation (MDT) reports similar benefits for its US 93 from Evaro to Polson project on the Flathead Indian Reservation. The department conducted the US 93 ACTT Workshop in January 2004 and awarded the first of 10 construction contracts in April 2005. According to Chief Engineer Loran Frazier, MDT incorporated a host of ACTT recommendations, including the following:

- Brand the project.
- Hire a public relations firm to document the process and the project.
- Prioritize parcels for acquisition.
- Allow concurrent appraisal review by MDT and the Tribes.
- Consider advanced funding of utilities.
- Utilize A-plus-B bidding and contractor incentives.
- Institute penalties for impacts to "do not disturb" areas.
- Limit the use of pre-approved and mandatory borrow sources.
- Allow one-lane nighttime operation.

The results have been significant, Frazier says, but could have been even more so had the workshop been held earlier in the project development process, where geotechnical and structures recommendations could have been incorporated.

"It was a very useful workshop," he says. "The results benefited the project as well as practices across the State. However, the workshop was late in the design process so wasn't as effective as it had the potential to be."

The Minnesota Department of Transportation's (MnDOT's) experience with the ACTT process parallels Montana's in many ways, especially in terms of timing.

> "The workshop was very successful in opening up the minds of the people who are very familiar with the various disciplines necessary to build a project. This open atmosphere…allowed for creativity in a realm where most rarely deviate from the standard guidelines or processes."
>
> Duane Manning
> Engineer
> Tennessee DOT

MnDOT incorporated a number of ACTT recommendations in preparing for the estimated $245 million I-35 W/TH-62 Crosstown project, including the development of innovative financing methods, the establishment of a pre-construction critical path method (CPM) and the securing of all necessary right-of-way (ROW) prior to the anticipated letting. The timing of the workshop proved detrimental, however, as MnDOT had just completed the geometric layout and was in the process of obtaining municipal consent. The next time, MnDOT says, it would host the ACTT workshop one year in advance of municipal consent so that major design changes could be considered.

Surprisingly, says Area Engineer John Griffith, MnDOT's use of innovative financing methods also caused some concern for the DOT, with the agency receiving no bids when it advertised the project for letting in March 2006.

After its ACTT workshop, the DOT developed a payout curve and time of completion that would force the contractor to work in advance of payment at various points during the four-year construction process. MnDOT extended the advertising period from 12 to 16 weeks to provide the contractors time to prepare for the letting – but to no avail. "The contractors felt that they were somewhat blindsided by that," says Griffith. "When it was all said and done, they felt our estimate of $245 million wasn't even close."

As a result, MnDOT has repackaged the project so that the payout schedule matches the CPM schedule, and it plans to re-advertise the project in March 2007.

Even though the project was not awarded as planned, Griffith believes that the work will be accomplished more quickly and with fewer impacts because of the ACTT process – a dividend realized by all of the DOTs surveyed.

INSIDE A WORKSHOP

With an increasing number of highway construction projects underway nationwide, State departments of transportation are looking for innovative ways to reduce construction time and traffic congestion and to "**Get In, Stay In** (and get it done right), **Get Out and Stay Out.**" The ACTT program helps owner agencies achieve these goals by bringing national transportation experts to the planning table.

A structured workshop is the centerpiece of the ACTT process. Once a State indicates that it wishes to host a workshop for a specific project, it must identify the project timeline, goals and skill sets. Using this information, the State invites national experts to their workshop for two days of intense brainstorming and discussion. At the end of those two days, each skill set provides counsel on innovative ways to accelerate construction, reduce project costs and minimize impacts to the community.

For more information, and for reports detailing the recommendations of completed ACTT workshops, visit http://www.fhwa.dot.gov/construction/accelerated/state.cfm.

WORKSHOPS AT A GLANCE

State	Project Cost	Project Construction Timeframe	Revised Project Goal
Ohio	$850 million	8 years	5 years
New Hampshire	$480 million	12 years	6 years
New York	To be determined	To be determined	To be determined
Hawaii	$100 million	5 years	2 years
North Carolina	To be determined	6 years	2 years

For more information, please visit
http://www.fhwa.dot.gov/construction/accelerated/

The Skill Sets
The Recurring Recommendations
The Contacts

Innovative Contracting / Financing

ROW / Utilities / Railroad Coordination

Geotechnical / Materials / Accelerated Testing

Traffic Engineering / Safety / Intelligent Transportation Systems (ITS)

Structures

Roadway / Geometric Design

Long Life Pavements / Maintenance

Construction

Environment

Public Relations

As State DOTs assume ownership of the ACTT process, recommendations are materializing that are proving applicable to other national and local projects. This section summarizes the recommendations from the skill sets utilized at the workshops held during 2006. It also supplies contact information for the skill set team leaders.

SKILL SETS REPRESENTED AT ACTT WORKSHOPS

WORKSHOP STATE DOT	Innovative Contracting/ Financing	ROW/Utilities/ Railroad Coordination	Geotechnical/ Materials/ Accelerated Testing	Traffic Engineering/ Safety/ITS
Ohio		✖	✖	✖
New Hampshire	✖	✖	✖	✖
New York				✖
Hawaii	✖		✖	✖
North Carolina		✖	✖	✖

* Ohio utilized two structures groups, Structures I (Major Bridges) and Structures II (Other Bridges and Retaining Walls).

** North Carolina featured a skill set entitled Historic Properties/Human Environment/ Public Involvement.

Structures	Roadway/ Geometric Design	Long Life Pavements/ Maintenance	Construction	Environment	Public Relations
✖*	✖		✖	✖	✖
✖	✖	✖	✖	✖	✖
✖	✖		✖	✖	✖
✖			✖	✖	✖
✖	✖	✖	✖	✖**	✖

INNOVATIVE CONTRACTING/FINANCING

The innovative contracting group explores state-of-the art contracting practices and strives to match them with the specific needs of the project. The innovative financing team's primary goals are to align potential financing options with project goals; match anticipated cash flow with project management; and provide options for managing competing priorities for existing resources.

Recurring Findings and Recommendations

- Use Grant Anticipation Revenue Vehicle (GARVEE) bonds.
- Charge for the use of ROW/lease the space under the viaducts.
- Generate revenue through user fees on high occupancy vehicle/high occupancy toll (HOV/HOT) lanes.
- Utilize design-build (D-B).
- Consider incentives/disincentives such as:
  - Time-specific rewards.
  - Lane rentals.
  - Holidays.
  - A five-day work week.
  - Weather days.
- Consider A-plus-B or A-plus-B-plus-C bidding, where C is a quality parameter, a maintenance option, etc.
- Establish performance specifications.
- Streamline the change order process/utilize a dispute review board.
- Implement quality assurance/quality control (QA/QC) specifications.

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ROW/UTILITIES/RAILROAD COORDINATION

The group's primary role is to ensure that ROW, utilities and railroad work comply with State laws and procedures. The team must also consider the numbers and types of businesses and residences impacted by a project and evaluate the ready availability of additional right-of-way.

Recurring Findings and Recommendations

- Provide for early ROW definition.
- Set ROW limits early based on preliminary design approval.
- Simplify the ROW plan process.
- Use incentives to acquire property more expeditiously.
- Provide stockpiling, staging and construction access.
- Coordinate utilities early.
- Utilize subsurface utility engineering (SUE) early in the process.
- Establish a dedicated utilities coordinator.
- Make advance ROW acquisition a priority so that ROW acquisition stays on schedule.
- Establish a dedicated ROW coordinator.
- Identify possible corridors for utility consolidation.

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GEOTECHNICAL/MATERIALS/ACCELERATED TESTING

The geotechnical team explores subsurface conditions to determine their impact on the project; pursues options for expediting materials acceptance and contractor payment; and evaluates the use of innovative materials in accordance with project performance goals and objectives.

Recurring Findings and Recommendations

- Acquire geotechnical information early; accurate data is critical.
- Define conditions at the walls, foundations and roadway.
- Estimate subgrade stabilization needs.
- Utilize intelligent compaction techniques. Include continuous monitoring of embankments and comprehensive stiffness information.
- Utilize an unbonded overlay where possible.
- Consider precast pavement panels.
- Use maturity meters.
- Utilize recycled materials.
- Build out of traffic.
- Consider full-depth asphalt on the mainline lanes.
- Consider using stone matrix asphalt (SMA).
- Use clear-span structures.

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TRAFFIC ENGINEERING/SAFETY/ITS

The traffic engineering team strives to enhance safety; improve traffic management; and explore technologies, including ITS systems, that will communicate real-time construction information to the public.

Recurring Findings and Recommendations

- Develop a formal transportation management plan.
- Establish an incident management (IM) team.
- Designate an IM coordinator.
- Conduct incident reviews.
- Enhance/promote transit.
- Improve arterial routes prior to construction.
- Provide a project web site and media connection to traffic management center (TMC) cameras.
- Utilize variable message signs (VMS).
- Use highway advisory radio (HAR).
- Incorporate permanent ITS into the project.
- Utilize 511.
- Provide real-time information.
- Make special events coordination a priority.
- Promote traveler and worker safety.
- Increase law enforcement patrol.
- Utilize an around-the-clock towing contract.
- Ensure mobility of emergency responders. Have a common means of communication.
- Maintain consistency with bike and pedestrian plans.
- Provide pull-off zones for breakdowns.

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STRUCTURES

The structures skill set focuses on accelerating the construction of structures. Their task is to identify the most accommodating types of structures and materials that will meet design requirements and minimize adverse project impacts.

Recurring Findings and Recommendations

- Use MSE, precast gravity or precast cantilever retaining walls.
- Use non-conventional bridge types with prefabrication and launching, where appropriate.
- Utilize SPMTs.
- Consider horizontal skidding.
- Utilize precast abutments and piers.
- Consider complete bridge prefabrication, Epping construction and other accelerated construction techniques.
- Utilize materials for long-term durability, i.e., high performance concrete (HPC), high performance steel (HPS) and epoxy-coated steel.
- Utilize nighttime/short-term lane closures.
- Allow full closures on weekends.
- Utilize temporary structures.
- Improve local roadways prior to construction.
- Use barges.
- Utilize pre-fabricated retaining walls.

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ROADWAY/GEOMETRIC DESIGN

The roadway team evaluates proposed geometrics and identifies the most accommodating product with the minimum number of adverse impacts.

Recurring Findings and Recommendations
As in years past, the Roadway/Geometric design recommendations proved to be quite project-specific, as evidenced by these suggestions from the skill set at the North Carolina workshop:

- Eliminate the access at Broad Street, and move it to the Peters Creek Parkway interchange. Extend the proposed construction limits of Peters Creek Parkway to First Street in conjunction with future urban redevelopment plans.
- Manage access by developing the two proposed interchanges to replace the current four.
- Lower the mainline profile to improve sight distance only in the vicinity of Marshall Street/Cherry Street.
- Consider a split diamond interchange with one-way collector-distributor (C-D) roads.
  - Construct a C-D from Marshall Street to Main Street, with access provided to Marshall Street, Cherry Street, Liberty Street and Main Street.
  - Cantilever or box I-40 Business from Marshall Street to Cherry Street.
  - Replace the Liberty Street mainline viaduct with a walled section or split diamond to Marshall Street and Cherry Street. There's no need for a C-D road and/or access to Main Street.
- Relocate the Liberty Street to Main Street alignment.
- Prohibit vehicle access at Fourth Street, Green Street and Spruce Street.
- Consider bike and pedestrian enhancements, i.e., wider bridges.
- Add access lanes in each direction.
- Utilize a 14- to 18-month total closure.

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LONG LIFE PAVEMENTS/MAINTENANCE

The long life pavements/maintenance skill set identifies pavement performance goals and objectives and explores future maintenance issues for the project corridor, including winter service, traffic operations and preventative maintenance.

Recurring Findings and Recommendations

- Utilize small increases in thickness to increase service life.
- Utilize perpetual pavements.
- Utilize SMA.
- Consider modified (polymer) asphalts.
- Shut down the road so that paving can be done in a continuous operation.
- Shut down one direction at a time.
- Utilize under drains.
- Recycle old roadway and bridge concrete.
- Eliminate guardrail as much as possible.
- Use storm drainage best management practices (BMTs).
- Utilize ITS technologies.
- Incorporate beautification elements, i.e., low-maintenance landscaping.

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CONSTRUCTION

The construction crew explores techniques that will encourage the contractor to deliver a quality product within a specific timeframe while maintaining traffic.

Recurring Findings and Recommendations

- Phase the project to facilitate construction.
- Combine similar work.
- Limit the duration of the mainline closure through the use of incentives, lane rentals, CPM and so forth.
- Consider a composite pavement design.
- Utilize accelerated construction methods such as:
  - Rapid setting (quick cure) concrete.
  - Precast deck and pavement panels.
  - Prefabricated bridge elements.
- Verify utility relocation requirements and prioritize the order to coincide with construction phasing.
- Encourage D-B.
- Identify potential waste areas.
- Address noise and vibration control.
- Promote traffic mobility.
- Select appropriate pavements.
- Recycle existing pavement.

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ENVIRONMENT

The environment team ensures that the scope of work and construction activities reflect local environmental concerns. Their goal is to provide the most accommodating and cost-effective product while minimizing natural and socio-economic impacts.

Recurring Findings and Recommendations

- Establish an interdisciplinary project design team to ensure a collaborative decision-making process.
- Conduct a comprehensive scoping process to determine project purpose and need and the level of environmental documentation needed.
- Investigate possible staging areas.
- Research noise, visual and vibration impacts.
- Examine the impacts of the project on historic properties, residences, churches, etc.
- Reach out to environmental justice (EJ) populations.
- Develop an aesthetics master plan.
- Provide for temporary noise attenuation during construction.
- Coordinate with other construction projects to minimize disruptions to the traveling public.
- Conduct a detailed study of potential detour routes utilizing origin-destination survey results.
- Partner with the City.
- Maintain consistency with existing bike/pedestrian plans.

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PUBLIC RELATIONS

The public relations skill set discusses ways to partner with local entities and effectively inform both local communities and the traveling public about the project before, during and after construction. Their role is to put a positive spin on the project.

Recurring Findings and Recommendations

- Establish a community relations/project management team.
- Hire a marketing/PR firm.
- Develop a strategic marketing plan.
- Develop a community relations plan.
- Brand the project.
- Identify and involve all stakeholders and partners.
- Utilize traditional and nontraditional communication tools, including:
  - Project web site.
  - 511.
  - News releases/traffic advisories.
  - Strong media relations.
  - Project tabloid.
  - The "face" of the project.
  - Project hotline.
  - Focus group surveys.
  - Door-to-door contacts.
- Celebrate project milestones.
- Establish and maintain credibility.
- Provide seamless communication. Keep the lines of communication open.
- Conduct regular surveys to determine effectiveness of communication methods. Adjust plan accordingly.

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EXIT 29B
Tillary St
Bklyn Civic Center
1/4 MILE
EXIT 29A
Manhattan Br
NEXT RIGHT
EXIT ONLY
RIGHT LANE EXIT ONLY
MANHATTAN BRIDGE
THRU TRUCK ROUTE

ACTT Projects, Backgrounds and Top Recommendations by State

Sharing national knowledge and expertise to promote accelerated construction and keep traffic moving

PROJECT

For the past several years, the Ohio Department of Transportation (ODOT) has been working with the community to develop a comprehensive strategy to rebuild the Cleveland Innerbelt. This effort, which evolved into the Cleveland Innerbelt Plan in 2004, includes rebuilding portions of Interstates 71, 77 and 90 through downtown Cleveland. Estimated cost is $850 million.

BACKGROUND

Constructed in the late 1950s and early 1960s, Cleveland's Innerbelt Freeway (I-90) is host to a number of operational and safety concerns. The Cleveland Innerbelt Plan, which consists of nine individual projects, will upgrade the existing facility to current design standards while balancing safety, operation and access. The corridor encompasses 25 bridges, including the 5,079-foot-long Central Viaduct. The project is complicated by the fact that the origin and destination points of approximately 85 percent of the a.m. and p.m. peak traffic fall within the project study area.

TOP RECOMMENDATIONS FROM WORKSHOP

- Determine if the project timeline is reasonable. Focus on ROW and the relocation of utilities with available cash on hand (including earmarks), especially for the Central Viaduct.
- When ready, bond and accelerate to finish in a reasonable timeframe. National experts say Ohio's indebtedness is conservative. Consider additional bonds.
- Utilize innovative techniques such as A-plus-B-plus-C contracting, incentives and disincentives, lane rentals, etc.
- Incorporate strategies to control material price spikes, i.e., pre-bidding of materials, shorter contract timeframes, etc.
- Establish a permanent, corridor-based project management team (PMT). Include a dispute review board (DRB) to be forward-looking and to control claims costs.
- Work with FHWA on allowing ODOT to let the highway contract prior to clearing ROW. This will help the project schedule tremendously.
- Divorce CPM from the financing package.
- Consider a five-year program instead of an eight-year schedule.
- Consider separate utility bridges.
- Consolidate utilities.
- Prepare a pre-approved list of relocation contractors for a utilities subcontract.
- Conduct a scientific survey to determine the demographics of roadway users. Use this information to tailor the outreach program and make targeted investments.

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NEW HAMPSHIRE FEBRUARY 2006

PROJECT

The I-93 Salem to Manchester (I-93 Improvements) project consists of 19.8 miles of Interstate 93 beginning at the New Hampshire/ Massachusetts State line and continuing north to the I-93/I-293 interchange. The project passes through five communities and includes sections of five State highways, as well as several other municipally-owned and maintained roadways. Forty-three bridges will be replaced, rehabilitated or widened as part of the $480 million project.

BACKGROUND

I-93 was constructed in the early 1960s and provides two lanes each in the northbound and southbound barrels. Recent traffic volumes throughout the corridor have exceeded 100,000 vehicles per day (VPD), which far surpasses the 60,000 to 70,000 VPD that the roadway was designed to accommodate. As a result, motorists encounter regular congestion and backups, and numerous accidents occur, many involving multiple vehicles. Safety and congestion are further compromised by substandard ramp and highway geometry at most of the interchanges.

TOP RECOMMENDATIONS FROM WORKSHOP

- Consider breaking out the final paving contract.
- Consider onsite hot mix asphalt (HMA) drum/crusher/concrete/precast plants.
- Consider utilizing a perpetual pavement design.
- Complete constructability reviews and evaluate material hauling routes outside of the mainline.
- Optimize construction sequencing by utilizing corridor-wide CPM scheduling.
- Assign a corridor-wide traffic control manager and construction management team.
- Develop a risk management plan for resource protection.
- Utilize time-based contracting strategies when appropriate, such as A-plus-B bidding, the use of incentives and disincentives, and tied bidding.
- Complete reviews on constructability and contract packaging with industry.
- Minimize phased construction.
- Skid bridges using SPMTs and other means.
- Consider relocating utilities off bridges.
- Advertise an early contract for fabrication of structural steel and precast elements to expedite construction and to increase supplier capacity.
- Consider acceptance of intent-to-build shop drawing plans to expedite review time.
- Consider acceptance of electronic shop drawings to expedite review time.
- Develop a detailed PR plan to keep users informed.
- Establish a dedicated ROW coordinator for the corridor.
- Complete early ROW definitions and advance acquisitions when possible.
- Utilize incentives to accelerate ROW acquisition.
- Establish a dedicated utility coordinator.
- Consider partnering with utilities to share cost when appropriate.

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NEW YORK

MARCH 2006

PROJECT

The Brooklyn-Queens Expressway (BQE) "triple cantilever" project encompasses 1.5 miles of the infamous BQE Expressway (or I-278), including 22 structures. The segment under study runs between Atlantic Avenue and Sands Street in Kings County and consists of a roadway elevated on a variety of steel and concrete bridges.

BACKGROUND

The most notable bridge along the project corridor, the triple cantilever, is a reinforced concrete, multi-level structure built in 1948. It carries six lanes of the BQE on two cantilevers, with the three eastbound lanes located above the three westbound lanes. The third cantilever features the Brooklyn Heights Promenade, a pedestrian walkway with views of the East River and the Manhattan skyline. Furman Street runs parallel to the Interstate, at grade. Local street intersections and connections to the Brooklyn Bridge north of the triple cantilever add to the complexity of the structure. Project constraints include substandard features and potential impacts on business development, residential communities, city parks, historical resources and multi-modal infrastructure.

TOP RECOMMENDATIONS FROM WORKSHOP

- Utilize temporary bridges.
- Double deck the BQE at Old Fulton Street.
- Use Furman Street as a detour.
- Study potential re-alignment at the Brooklyn Bridge.
- Use pre-fabricated bridge units.
- Form a community advisory group early in the process.
- Form a multi-disciplinary project design team.
- Coordinate with park construction. Work with other agencies early in the process.
- Utilize the park as the staging area.
- Use barges for staging and for delivering materials.
- Use Pier 7 for storage/staging.
- Conduct a comprehensive internal and external scoping process to:
  - Refine project purpose and need.
  - Delineate and map the environmental context.
  - Obtain agency and public input.
  - Establish transportation and environmental performance measures that will support environmental streamlining and stewardship.

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PROJECT
The Interstate Route H-1, Pearl City, Waimalu and Airport Viaduct Deck Improvements project spans Interstate H-1 from Waipahu (milepost 8.8) to the Honolulu International Airport (milepost 18.1). Collectively, the three viaducts comprise nearly four miles of the nine-and-a-half-mile corridor.

BACKGROUND
The scope of work for the project is to provide a repair method that will address the deteriorating deck surface of the three viaducts. Ultimately, the Hawaii Department of Transportation's (HDOT's) goal is to find a long-term (50-year) solution that will prolong the life of the three structures without crippling traffic along some of the State's most heavily used roadways. Estimated cost for the project is $100 million.

TOP RECOMMENDATIONS FROM WORKSHOP
- Consider A-plus-B or A-plus-B-plus-C contracting, where C is a quality parameter, a maintenance option, etc.
- Utilize a two-step process that consists of short listing qualified contractors and reviewing their proposals.
- Rate proposals utilizing best-value factors.
- Use incentives to speed up construction.
- Construct a temporary bridge over the top.
- Remove the median barrier to provide for more lanes of traffic.
- Approach this as one project with multiple phases.
- Brand the project.
- Communicate and coordinate with other agencies.
- Look at joint development agreements for the ROW under the viaducts.
- Consider user fees or high occupancy toll (HOT) lanes.
- Implement a long-term maintenance agreement; it offers the quality hook as well as life cycle cost efficiencies.
- Include performance specifications in the areas of traffic management, quality and life cycle efficiency.

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NORTH CAROLINA APRIL 2006

PROJECT

The US 421/I-40 Business in Winston-Salem project stretches from west of Fourth Street to east of Church Street. Originally, the North Carolina DOT (NCDOT) envisioned the US 421/I-40 Business in Winston-Salem project as a pavement rehabilitation effort. However, as the project evolved, NCDOT realized that minor rehabilitation would not address the safety and mobility improvements needed throughout the corridor. Thus, NCDOT incorporated design improvements into the project scope.

BACKGROUND

Numerous bridges throughout the project corridor have substandard design features, including horizontal and vertical alignment issues and ramp configurations, that do not meet AASHTO recommendations – and that contribute to the congestion and high accident rates experienced at several locations within the project limits. Furthermore, NCDOT expects that driving conditions will continue to deteriorate as traffic volumes rise. A key challenge is the narrow project corridor, which provides no room to shift traffic in order to maintain the existing lanes during construction.

TOP RECOMMENDATIONS FROM WORKSHOP

- Coordinate with local entities, including Duke Energy, Bell South, Time Warner, NCDOT ITS, Piedmont Natural Gas, the City of Winston-Salem (for water, sewer and signals/ lights) and existing historic districts.
- Involve environmental agencies.
- Address staging/lay-down area requirements.
- Consider splicing moratoriums, seasonal restrictions and budget constraints when planning the project.
- Establish a pro-active public relations program.
- Eliminate the structures at Fourth Street, Green Street and Spruce Street.
- Let multiple early contracts for bridge removal, utility relocation and pedestrian/bike bridge construction.
- Manage access by developing the two proposed interchanges to replace the current four.
- Lower the mainline profile to improve sight distance only in the vicinity of Marshall Street/Cherry Street.
- Consider a split diamond interchange with one-way C-D roads.
- Encase utilities in a precast vault (under or outside the shoulder) to avoid future damage to the pavement. Share the cost with fiber companies.
- Consider various uses for old roadway and bridge concrete. They include subgrade stabilization, fill, aggregate base (if needed), crush-in-place, use for maintenance operations (for driveways, shoulder stabilization, etc.), staging material at urban redevelopment sites, etc.
- Incorporate beautification elements such as concrete imprints and colorings; retaining wall/ noise wall décor; white cement median barriers; and low-maintenance landscaping.
- Phase the project to facilitate construction for the interior portions of the corridor.

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CALENDAR OF ACTT WORKSHOPS

Schedule of ACTT Workshops

State	Pre-workshop meeting	Workshop	Project
Upcoming Workshops			
Ohio - Columbus	8/30/2006	01/9-11/2007	I-70/71 Split Project
Idaho	11/7/2006	2/13-15/2007	I-84, Boise
Michigan	11/14/2006	TBD	I-94, Detroit
Completed Workshops			
Indiana	N/A	3/17-18/2002	I-465
Pennsylvania	N/A	4/10-12/2002	SR-28
Texas	7/15/2003	9/9-11/2003	Pegasus
New Jersey	7/23/2003	10/27/2003	SR-46
California	8/13/2003	12/9-11/2003	French Valley Parkway
Louisiana	12/15/2003	12/15-16/2003	I-20, Monroe
Montana	9/23/2003	1/26-28/2004	US-93 Evaro to Polson
Washington State	2/10/2004	3/16-18/2004	SR-520
Tennessee	2/18/2004	4/6-8/2004	I-40, Knoxville
Oklahoma	3/26/2004	5/25-27/2004	I-40
Minnesota	3/30/2004	6/14-16/2004	I-35
Wyoming	6/10/2004	9/21-23/2004	US-287/26
New Jersey	7/26/2004	11/16-18/2004	I-295/ I-76/ SR-42 Interchange
Georgia	10/14/2004	11/30-12/2/2004	I-75
Rhode Island	9/9/2004	1/25-27/2005	I-95, Providence
Utah	11/10/2004	2/15-17/2005	I-15, Ogden
Iowa	2/23/2005	2/23/2005	Boone/Madison County Bridges
Nevada	12/7/2004	3/15-17/2005	I-15, Las Vegas
Oregon	12/16/2004	4/19-21/2005	I-405, Portland
New York	4/14/2005	6/14-16/2005	Tappan Zee Bridge
Iowa	5/4/2005	8/16-18/2005	I-80/I-29/I-480
Wisconsin	5/11/2005	9/13-15/2005	I-94, from IL State Line North
Illinois	6/23/2005	10/11-13/2005	I-74, Quad Cities
Ohio - Cleveland	11/7/2005	2/20-22/2006	Innerbelt Corridor Project
New Hampshire	9/23/2005	2/21-23/2006	I-93, Salem to Manchester
New York	8/9/2005	3/19-22/2006	BQE Triple Cantilever Bridge
Hawaii	10/14-17/05	4/18-20/2006	Interstate, Route H-1 Viaducts
North Carolina	9/2/2005	4/24-26/2006	US 421/I-40 Business, Winston-Salem

For more information, please visit
http://www.fhwa.dot.gov/construction/accelerated/timeline.cfm.

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