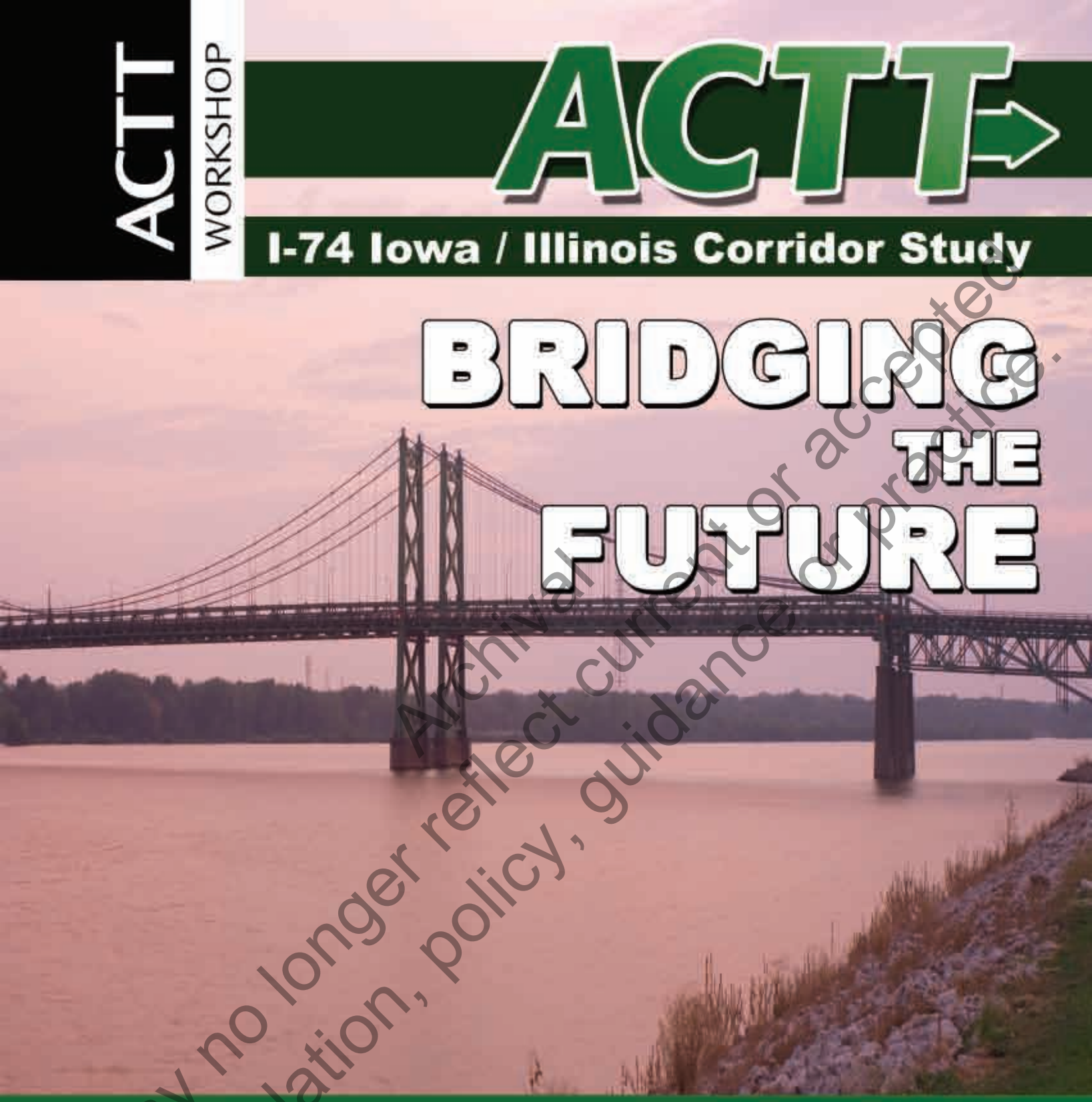
ACTT WORKSHOP

ACTT

I-74 Iowa / Illinois Corridor Study

BRIDGING THE FUTURE



U.S. Department of Transportation
Federal Highway Administration

Iowa Department of Transportation

Illinois Department of Transportation

I-74 IOWA-ILLINOIS CORRIDOR STUDY

- ACTT provides a fresh outlook by bringing national experts to your planning table.
- ACTT introduces innovations that have been tested elsewhere.
- ACTT saves time: according to FHWA's ACTT II report, published in March 2005, "most agencies have found ways to slice construction time by 30 percent or more."
- ACTT saves money: ACTT suggestions enabled New Jersey to reduce its budget for the Route 46 bridge project from $10 million to $7.2 million.
- ACTT works for you and your customer!

How do I ACTT?

- Select a corridor: ACTT is most helpful when applied during the project development phase.
- Make a workshop proposal to ACTT team members, and submit a copy of your proposal to the FHWA Division Office. Include details on the project corridor, timeline and goals.
- Hold a pre-workshop meeting with the ACTT management team.
- Select a meeting site, and coordinate workshop details with the FHWA Division Office.
- Host the workshop.
- Draft a report for submittal to FHWA.
- Incorporate ACTT into project operations.

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EXECUTIVE SUMMARY

Transportation agencies across the Country are facing unprecedented challenges in the management of traffic, says FHWA's Office of Operations in "Travel Demand Management: 21st Century Operations using 21st Century Technologies":

> In the 21st century, strategies to manage demand will be more critical to transportation operations than strategies to increase capacity (supply) of facilities. The inability to easily and quickly add new infrastructure, coupled with the growth in passenger and freight travel, have led to the need for transportation system managers and operators to pay more attention to managing demands.

The need to manage ever-rising traffic volumes is one of the factors driving the I-74 Iowa-Illinois Corridor Study, a major reconstruction project now in the planning phase. Because the corridor runs through two States and three Cities, collaboration and coordination will be important to the success of the project.

Knowing this, the Illinois and Iowa DOTs contacted FHWA about hosting an ACTT workshop for the I-74 corridor study. In discussions held at a pre-planning meeting with FHWA and AASHTO representatives, the project team identified seven skill sets applicable to this project:

- Construction.
- Innovative Contracting/Financing.
- Traffic Engineering/Safety/ITS.
- Public Involvement.
- Geotechnical/Pavements/Maintenance.
- Structures.
- Right-of-Way/Utilities/Railroad Coordination.

Each skill set team's goal was to focus on how the ACTT process applied to their area of expertise, while the group as a whole searched for methods and measures to help Iowa and Illinois achieve the project goals. As the workshop progressed, each team summarized their thoughts and narrowed them down to a list of priority recommendations for presentation to the group on the final day.

Now that the workshop is complete, the Iowa and Illinois DOTs will review the skill set recommendations and incorporate them into the development of the I-74 Iowa-Illinois Corridor Study.

1.1. Opening Session

The Iowa and Illinois DOTs hosted the I-74 Iowa-Illinois Corridor Study workshop October 11-13, 2005, at the Isle of Capri in Bettendorf, Iowa.

Illinois DOT Program Development Engineer Ross Monk and Illinois FHWA Assistant Division Administrator Glenn Fulkerson provided opening remarks, after which the participants introduced themselves. Jerry Blanding, innovative contracting engineer for FHWA's Baltimore Resource Center, and Janeen Loughin, project manager for Stockton & Associates, discussed "Why ACTT, Why Now," and Iowa DOT Project Manager Tammy Nicholson provided a project overview. Mr. Blanding reviewed the workshop agenda, and the day ended with a bus tour of the project area.

1.2. Workshop Process

Mr. Blanding and Mr. Loughin served as workshop and breakout session moderators, respectively. Mr. Loughin began the second day with an overview of the logistics for the breakout sessions. Next, the skill set teams met to discuss the project and brainstorm preliminary ideas. Before lunch, the group reconvened to share the teams' initial ideas. After lunch, the individual skill sets continued their work, intermingling with other teams to ask questions and share ideas. The skill sets spent the remainder of their time preparing final recommendations for presentation to the group on Thursday morning.

1.3. Skill Set Goals

The overall goal for the workshop was to reduce construction time while giving motorists a high-quality product. In addition, participants in each skill set had an established group of goals that was unique to their subject area.

Construction

- Consider constructability of the river bridge structure.
- Discuss project phasing and coordination between phases.
- Minimize cost and construct within budget.
- Minimize construction impacts to traffic.
- Allow for winter maintenance.
- Minimize environmental impacts.

Innovative Contracting/Financing

- Employ appropriate contracting methods to encourage the contractor to speed up construction.
- Identify contract administration methods that will allow for better utilization of State personnel.
- Consider innovative financing options applicable to this project.
- Discuss innovative financing options used by other States (i.e., tolling, bonding, D-B, public/private partnerships, etc.).

Traffic Engineering/Safety/ITS

- Utilize the existing ITS facilities during construction.
- Discuss MOT plans and traffic operations during construction.
- Minimize traffic disruption and incidents during construction.
- Aim for no worker injuries throughout construction.
- Keep accidents to a minimum.
- Accommodate special events.
- Optimize the utilization of ITS and notification processes to reduce traffic and congestion.

- Consider the use of improved temporary and permanent pavement markings.

Public Involvement

- Consider public involvement opportunities both before and during construction.
- Brainstorm ways to utilize the corridor aesthetics advisory team.
- Ensure citizens don't dictate what is done with the process.
- Present ideas to the public that the DOTs are willing to incorporate.
- Allow for local flavor and buy-in.
- Consider the look of the corridor-type plantings, etc.
- Review some of the public involvement activities done to date and discuss new ideas/additional public involvement opportunities.
- Keep the public informed of progress/schedule/traffic operations.

Geotechnical/Pavements/Maintenance

- Utilize innovative methods and materials that will allow for faster construction.
- Look at the opportunities to replace methods specifications with performance specifications.
- Minimize pavement noise.
- Reduce settlement times.
- Discuss the maintenance agreement involving both DOTs.
- Reduce snow maintenance.
- Discuss bridge and bike/pedestrian maintenance ideas.
- Provide a long-life pavement: 50 years without a major maintenance cycle.

Structures

- Reduce structures construction time.
- Reduce both the initial and life-cycle costs of structures.
- Consider security risks with one versus two bridges.
- Consider the use of innovative materials.
- Consider cost-effective design solutions.
- Consider other deck arrangement options.
- Evaluate deck type and deck maintenance.
- Consider aesthetically pleasing elements and other enhancements (i.e., bike trail).

Right-of-Way/Utilities/Railroad Coordination

- Identify ways to ensure all utilities are located early.
- Expedite utility relocations.
- Minimize ROW delays.
- Discuss the use of SUE and where/when it might be applicable.

2.1. Project Overview

The Iowa and Illinois DOTs have proposed improvements to the I-74 corridor in the Quad Cities from Avenue of the Cities in Moline, Illinois, to 53rd Street in Davenport, Iowa. The study corridor traverses the Cities of Moline, Bettendorf and Davenport and includes a crossing of the Mississippi River (See Figure 1). The proposed improvements comprise additional capacity on I-74; an improved Mississippi River crossing; enhancements to the existing six service interchanges; upgrades to the connecting arterial roadway system; and improved opportunities for transit, bike/pedestrian and intermodal connections.

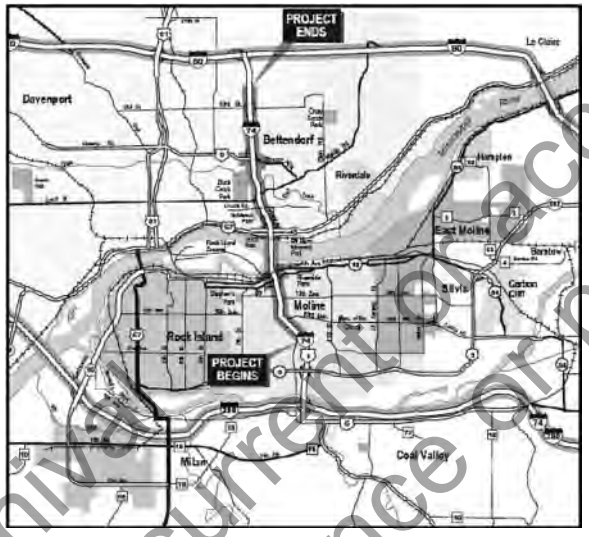

Figure 1. Project Area

The study corridor contains a mix of residential, commercial and industrial development throughout most of its length. While there are residential areas throughout the project corridor, there are concentrations of residential property south of the commercial area in Moline and north of the business area in Bettendorf. Newer residences have sprung up adjacent to the I-74 corridor in Davenport near the northern end of the project corridor.

The key industrial areas are located along the river in both Moline and Bettendorf. In addition, two trails (the Great River Trail in Illinois and the Bettendorf Riverfront Trail in Iowa), numerous parks and various open-space areas are located along the river in both States and along Duck Creek in Bettendorf and Davenport.

2.2. Project History and Development

I-74 plays an important role in the local, regional and national transportation network. The I-74 corridor was opened to traffic in the early 1970s, which means that both the Interstate pavement and the bridges within the study area are more than 30 years old. The Iowa-bound bridge over the Mississippi River was built in 1935 and is now 70 years old.

Since its opening, the I-74 corridor has served as a critical link in the Quad Cities regional transportation network, functioning as the principal commuter route for Iowa and Illinois residents traversing the Mississippi River. The corridor is strategically located to provide connections to regional rail, air, river and intermodal transportation hubs.

The need for improvements to I-74 was first identified in the December 1998 "Quad Cities Mississippi River Crossing Major Investment Study," an analysis spearheaded

by the Iowa and Illinois DOTs. As a result, in early 2000, the DOTs initiated planning and environmental studies for the I-74 corridor. These analyses not only validated the need for improvements to I-74, but they also evaluated a full range of alternatives and identified anticipated environmental consequences.

Public input has proven to be a key component of the planning and environmental studies, with two public information meetings held during phase one of the study. The purpose of the first meeting, held in July 2001, was to: 1) present information regarding current I-74 conditions and the purpose and need for proposed improvements; and 2) obtain public comment on concept alternatives developed in the early stages of the study. At the second meeting, held in August 2002, the DOTs presented information regarding current I-74 conditions, the purpose and need for the proposed improvements, the continued use options for the existing bridges and the status of project development issues. Both meetings were conducted using an open-house format.

Once public comments were compiled, the DEIS was prepared and then signed in October 2003. At the public hearing for the DEIS in December 2003, the DOTs presented the findings of the corridor study, the DEIS and the draft 4(f) statement. Information presented at the hearing included a summary of the alternatives considered and the alternatives still under consideration as well as a discussion of the potential adverse and beneficial effects of the alternatives. Nearly 400 people attended the hearing.

Work accomplished in 2004 included updating traffic forecasts and analyses for the year 2035, investigating design options for trail crossings over the Mississippi River, investigating navigational requirements along the Mississippi River, and conducting additional traffic analyses in downtown Moline, downtown Bettendorf and near the 53rd Street interchange. As a result, the stakeholders were able to identify a preferred alternative in January 2005. Because the project is in the study phase, no cost estimates are in place. Major construction efforts (the bridge and bridge approaches) will not likely begin before the year 2010.

2.3. Project Purpose

The purpose of the proposed improvements is to: 1) improve capacity, travel reliability and safety along I-74 between Avenue of the Cities in Moline and 53rd Street in Davenport, and 2) provide continuity with local land use planning goals. The need for the proposed improvements is based on a combination of factors considered key to providing better transportation service and sustaining economic development. In particular, the Iowa and Illinois DOTs are focused on addressing the following needs:

- Traffic demand and service.
- Roadway geometry.
- Economic development.
- Dependability of travel.
- Transportation connections.
- Infrastructure condition.
- Safety considerations.

Steadily increasing traffic volumes and decreasing LOS throughout the project corridor are a concern for both the Iowa and Illinois DOTs. In 2000, I-74 carried 74,000 vehicles per day near the river; by 2002, that number had increased to 77,800. Near the river crossing, the I-74 mainline operated at LOS E during the peak hour in

2000. It continues to maintain LOS E but is just above the threshold for LOS F. This is far below the minimum acceptable LOS of C. Motorists in this area regularly encounter stop-and-go conditions and backups at interchange ramps. As traffic volumes continue to increase, these conditions will only worsen.

Roadway elements that contribute to safety concerns throughout the corridor include: 1) narrow lanes and a lack of shoulders on the existing river-crossing structures and approaches; 2) a series of reverse curves with tight radii on the Illinois approach to the river bridge; 3) maximum vertical grades on both the Illinois and Iowa approaches; 4) close interchange spacing; and 5) short, steep taper rates on the ramps. In addition, the roadway itself is deteriorating to the point that major reconstruction or rehabilitation may be necessary at the same time the project corridor is undergoing the improvements being discussed in the I-74 corridor study.

2.4. Project Challenges

The key design challenges are as follows:

River Crossing Locations. Demand for access across the river is expected to increase 5 percent by 2025. Five highway bridges currently provide access across the Mississippi River in the Quad Cities. Of those, only three cross within the more densely developed portions of the Quad Cities and are used predominantly by area commuters. Because of its location and characteristics, the I-74 bridge carries the majority of daily crossings: approximately 90 percent of traffic on the I-74 bridge originates from or terminates in the local metropolitan area.

Downtown Access. Given the economic importance of Moline's and Bettendorf's downtown areas and the limited availability of viable alternative river-crossing routes, it is important to maintain access to these downtown areas during construction.

Roadway Geometry. The I-74 project will upgrade the roadway geometrics to current design standards and improve safety by adding shoulders to the Mississippi River crossing, increasing ramp taper rates, eliminating reverse curves on the Illinois approach and increasing interchange spacing, all while maintaining traffic across the river.

Affordability. Having an economic and efficient design that has the support of the community will be vital in moving towards construction. SAFETEA-LU earmarks are being used for the preliminary engineering and environmental work, with additional earmarks in place for final design and right-of-way.

Coordination. This project involves multiple States, Counties and Cities. Effective communication and coordination will be key to moving this project forward.

2.5. Project Status

During the next 18 to 24 months, the project team will continue to refine the design features of the preferred alternative to the level required to support delineation of a selected alternative, prepare the FEIS and complete the ROD. Preliminary roadway design will begin for a large portion of the corridor, including the new I-74 Mississippi River Bridge. With this work, the project team will refine the design features for the I-74 mainline, ramps and connecting roadways. This will enable the team to analyze potential environmental impacts, identify ROW requirements, and develop a more precise estimate of the construction timeframe and budget.

3.1. Construction

The construction team focused much of its discussion around construction of the central section of the project and the coordination that would be needed between Iowa and Illinois. They put forth many different ideas regarding contract packaging, staging and accelerating construction. Their suggestions are listed below:

Contract Administration

- Let the entire project as a single super project. This may be difficult due to differences between the two States as well as in union and Davis-Bacon requirements. Also, it may not be politically popular.

- Let the central segment as three separate contracts. The mainspan bridges and approaches would fall under one big contract. A second contract would be let for the outlying areas in Illinois and a third for the outlying areas in Iowa.

- Let the central segment as five separate contracts. The five contracts would consist of the Moline approach, the Bettendorf approach, the mainspan bridges, the outlying area in Moline and the outlying area in Bettendorf. The two downtown-area projects and the mainspan bridges would have to be done simultaneously. The construction group thought this idea would work best.

- Use accelerated construction techniques in downtown Moline (from 5th Avenue to the abutment south of 7th Avenue, including the 7th Avenue Northbound ramp) and in downtown Bettendorf (from Brown Street to the mainspan).

- Use traditional construction methods north of downtown Bettendorf, south of 7th Avenue and for the mainspan Mississippi River crossing.

Construction Staging

- Construct the outlying areas in Moline and Bettendorf first. These are independent projects that can be accomplished using traditional construction methods.

- Open the downtown Moline, Bettendorf and mainspan roadways simultaneously.

    * Accelerate work in the downtown areas and consider these to be critical path items. Take note that the existing footings in the tie-in areas for both Moline and Bettendorf may not be demolished completely.
    * Consider an early phase that includes altering downtown Bettendorf and combining the one-way pair (US 67) with a temporary tie-in to the existing structure. This would limit Brown Street to the bridge.
    * Remember that closure of the northbound 7th Avenue ramp is critical. Consider a hyperfix: completely close the roadway to traffic for a short amount of time rather than staging construction over a longer period of time.

General Contracting

- Ensure that construction materials are readily available when needed. The river can be utilized to enhance corridor access.

- Regulate vibration and noise. Ensure that all involved with the project team have a working knowledge of local noise ordinances.

- Utilize spread footings and rock pocket footings for the structure.

- Provide staging areas for the contractors, specifically in the tie-in areas. Possible staging areas include the parking lot under the structure between northbound/ southbound Illinois 92 on the Illinois side and the new northbound US 67 ramps on the Iowa side.

Physical Features

- Per DOT agreement, maintain a 400- to 500-foot channel opening during construction:

    * Coordinate with the Coast Guard. Is this a 24/7, 365-days-a-year requirement?
    * Determine whether the requirement will impact the use of river barges for constructing the mainspan.

- Advocate structure versus fill rather than variegated (fill-structure-fill) through the approach areas. Must consider the public relations impacts of the aesthetics and the long-term maintenance on differential settlement.

- When looking at final design and construction phasing, remember that the existing footings in the tie-in areas in both Moline and Bettendorf may not be demolished completely.

Coordination

- Work with the Coast Guard regarding removal of the existing bridge. Does demolition of the bridge require complete removal of the existing piers/footings versus removal to one foot below the channel bottom?

- Discuss whether there will be temporary utility relocations associated with construction. They may not be within the final footprint but might be impacted during construction.

- Coordinate with other entities as needed, i.e., the railroad, FAA and local governments.

- Consider other environmental issues such as mussels, the effects of demolishing the existing bridge, etc.

- Obtain project buy-in from local governments and unions.

- Remember to accommodate winter maintenance: construct 12-foot lanes.

Project Management

- Prepare formal partnering agreements between parties. This includes a defined conflict resolution process.

- Have a DOT project manager in a project office in both Iowa and Illinois.

- Utilize public relations opportunities, and be careful of potential pitfalls (i.e., don't have a completed bridge that's not open).

- Designate one person as the media spokesperson for the project.

3.2. Innovative Contracting/Financing

The innovative contracting/financing team discussed many techniques new to Iowa

and Illinois. The following summarizes their key suggestions:

Staging/Packaging

- Designate a project director with authority over resident engineers. This person would be accountable to both States and would coordinate the corridor-level effort as well as the public relations program.

- Establish segment priorities. Prioritization will likely be driven by the availability of funds, outside political pressure and rising user/maintenance costs.

- At a minimum, coordinate mainspan construction with work on the adjoining interchanges.

Advance Work

- Advance ROW hardship acquisition, utility contracts and subsurface utility exploration.

Financing Options

- Consider the following financing options for the I-74 project:

    * Cash reimbursement option.
    * Toll bridge structure only.
    * Toll bridge privatization.
    * State/local partnership: tax increment financing plus annual State payment.
    * Bonds on a Statewide approach.
    * Earmarked monies; future potential.

Design-Build Contracting

- Consider D-B for the river crossing and the adjacent interchange projects. This would require legislation and a unified approach from both States. D-B would also require a guaranteed funding source.

Contract Coordination

- Remember that it is very important to coordinate contracts, especially with large projects involving multiple States.

- Consider forming a bi-State executive team to oversee the project.

- Develop an ITS plan that both States agree upon. This would be useful for traffic management.

- Consider using CPM scheduling to filter information and break the project into definable, prioritized packages. If this is used, State personnel would need training.

- Have a process in place to address conflicts before the project begins. It needs to include conflict resolution and alternative dispute resolution methods. The specifics could be pulled from partnering specifications.

Contracts

- Consider the following contracting options:

    * A-plus-B bidding.
    * Warranties.

* No excuse bonus.
* Lane rental clause.
* Constructability meetings.
* Time between contract letting and startup.
* Construction window/late start dates.

Performance-Based Traffic Management

- Use performance-based traffic management specifications to remind the contractors that safety and traffic management are important. The following could be applied to the mainline only or to the entire project:

  * Incentive payment for safety.
  * Incentive payment for congestion mitigation.
  * General inclusion of performance-based specifications where possible.
  * Appropriate risk-sharing with the contractor.

3.3. Traffic Engineering/Safety/ITS

The traffic engineering/safety/ITS group discussed various ways to minimize construction impacts to the general public. They focused much of their discussion on ITS systems, work zone safety, incident management and maintenance of traffic:

Communication and Coordination

- Define a communication and coordination framework at the executive level in both Iowa and Illinois.

- Utilize a bi-State approach to project coordination and management.

- Establish a corridor management team prior to construction. The corridor management team should include the following:

  * Corridor manager (team leader).
  * Traffic manager (i.e., corridor consultant).
  * Web manager.
  * Public information manager.
  * Overall bridge manager.
  * Others as needed.

ITS

- Implement ITS solutions throughout the corridor. It would be best to coordinate between the two States and implement ITS before construction. During construction, a majority of the information will be specific to the ongoing work. Some thought should be given as to what will happen to the system after construction and if there will be a long-term command center.

- Utilize ITS tools to provide travelers with construction information and to aid in traffic management:

  * Cameras.
  * DMS.
  * HAR.
  * BIMRS.
  * Sensors.
  * Communication (fiber and wireless).
  * Bridge access control system.

* Accident investigation sites.
* Public website.
* Media coordination.
* CAD/BIMRS integration.
* Steer-It-Clear-It program.
* RWIS cameras.

Work Zone Safety

Work zone safety will be very important during construction. The following would help maintain a safe work zone for both workers and drivers:

- Use physical barrier (barrier rail) to keep traffic separate from workers.
- Promote public education through the media and use of corridor signage.
- Provide agency and contractor training.
- Implement contractor safety awards/incentives.
- Incorporate ITS tools and data.
- Provide continuity between the States.
- Increase law enforcement efforts (speed postings, fines, etc.).

Traffic Incident Management

- Develop a coordinated traffic management plan. This plan should define emergency access locations and communication protocols. A command center and highway helper system would also be beneficial to the project.

- Engage stakeholders, especially City officials and emergency responders, early and often.

- Provide multi-jurisdictional/multi-disciplinary training for those involved in traffic management.

- Coordinate traffic signals on diversion routes.

Construction Staging/Phasing

- Coordinate the construction of interchanges so that adjacent facilities are not closed at the same time.

- Coordinate with local agencies so that adjoining facilities are not under construction when they are needed for diverting I-74 traffic.

- Enhance the local diversion routes so they are able to handle traffic diverted from the Interstate.

- Consider access to construction areas and any traffic that may be affected.

- Use 3D/4D modeling to show how traffic will operate during construction.

- Develop an extensive media/public outreach program utilizing ITS.

Maintenance of Traffic

- Maintain two lanes of traffic in each direction (for peak periods) throughout construction.

    * Allow closures based on traffic volumes.
    * Consider a hyperfix at the tie-in locations.

- Plan for special events.
  * Prohibit lane closures.
  * Promote alternative transportation (i.e., Park-N-Ride).

- Consider contractor incentives/disincentives, including lane rentals and level of service bonuses.

- Use consistent standards for both States.

- Ensure law enforcement presence throughout the project.

- Plan and promote alternate modes of transportation.

- Enhance traffic control devices (i.e., pavement markings, etc.).
  * Utilize state-of-the-art (holographic) technology.
  * Consider factors such as inclement weather, nighttime conditions, ease of removal, "ghost markings," durability and the limited vision of older drivers.
  * Use ITS technologies (i.e., DMS, HAR, etc.).
  * Consider using 3D/4D modeling.
  * Research various signing/lighting options.
  * Use more visible/higher-profile traffic control devices.

3.4. Public Involvement

The public involvement team's discussion centered on the fact that public involvement touches all aspects of the project and is important from day one forward. The group communicated several items vital to the success of the project, including legislative and public agency support, knowledge transfer and message continuity. The group discussed various ways to involve constituents, both before and during construction.

Public Involvement Ideas up to Construction and Ongoing

- Designate a project spokesperson.
- Develop a project slogan.
- Utilize public focus groups.
- Have a staffed project office.
- Use public access television to publicize project videos and press releases.
- Schedule breakfasts with local officials.
- Target minority groups (i.e., through website language conversion).
- Develop/produce a project newsletter (for mail and e-mail).
- Have a dedicated project website.
- Develop a project video.

Public Involvement Ideas during Construction

- Provide an online "trip planner."
- Utilize HAR.
- Provide real-time traffic displays.
- Host a construction call-in line.
- Provide construction tours.
- Promote nighttime construction.
- Publicize morning commute changes.
- Provide daily/weekly e-mail updates (for those who would like them).
- Promote mass transit.
- Subsidize mass transit.

- Utilize bridge bucks.
- Utilize pre-planned routing.
- Publicize business hour changes.
- "Scare public" using worst-case scenarios so that they use alternate routes, mass transit, etc.
- Prepare a bridge fact sheet.
- Promote project giveaways.
- Adopt a school.
- Provide "Open for business" signs for establishments affected by construction detours.

Ways to Utilize Corridor Design Team
- Have a specialty spokesperson.
- Promote community ownership.
- Address context sensitive issues such as sound barriers.
- Promote community values by asking how dollars should be spent and addressing the perspective from corridor/side roads.

Additional Public Involvement Ideas for Construction Schedule/Traffic Operations Updates
- Obtain FCC buy-in to temporarily use the same frequency on both sides of the river.
- Promote project giveaways.
- Utilize a 1-800 number.

Traffic/Safety/ITS Public Involvement Ideas
- Educate the public at casinos.
- Develop a game wheel.
- Give away prizes/lotto tickets.
- Have a scratch ticket toll bonus.
- Put a face on the project; i.e., "Jack Hammer" or "Barrel Man." Put a face on workers.
- Promote the three Ss (speed, space, seatbelts).
- Put a project update on the front page of the newspaper (like the weather report).
- Promote a working relationship between the transportation reporter and project manager.
- Use billboards to showcase the project.
- Have a public information expert frame and deliver the public relations messages.

Geotechnical and Materials Public Involvement Ideas
- Let the public help choose the patterns and colors for facing panels, retaining walls and bridge abutments.
- Consider the bridge color/paint type. Include pigment in low permeability concrete.
- Have highway helpers assist stranded motorists during construction.

3.5. Geotechnical/Pavements/Maintenance

The geotechnical/pavements/maintenance skill set discussed ways to accelerate construction of the embankment, provide a long-lasting pavement and minimize long-term maintenance along the I-74 corridor:

Pavement
- Optimize the gradation of aggregates (whether PCC or HMA).
- Consider 3-I aggregates: they are suitable for 30- to 40-year pavement designs.

- Use Type I and Type II cements.
- Implement performance-based specifications.
- Design a thicker pavement and base (has higher initial cost but longer life):
  * Consider a continually reinforced concrete with an HMA wearing surface.
  * Use a one- to two-foot improved subgrade layer; crush the existing concrete to C6 and add fabric if open; cap with three-inch fillings of RAP material.
- Recycle existing pavement material:
  * Recycle in place.
  * Rubblize existing pavement with HMA on top to speed construction.
  * Recognize that it may be difficult to recycle the mainline pavement due to the use of slag and polymers.
- Use high-performance concrete.
- Use precast concrete slabs in critical staging areas.
- Use local roads early in the project (rather than the mainline) to test new materials.

Structural Materials

- Use A709 HPS50/70W or A710, grade B high-performance steel.
- If the bridge is to be painted, choose a bridge color that is not susceptible to fading.
- Use weldable rebar, either epoxy coated or bare (see IL spec A706).

Maintenance

- Consider and communicate with maintenance on all aspects of design and construction.
- Treat the walls with paraffin and avoid rough surfaces to minimize graffiti effects.
- Minimize corrosion susceptibility by 1) using a spray-on poly-urea coating on steel and concrete structures, and 2) specifying low permeability concrete, weathering steel and/or coated rebar.
- Landscape with a grass species that has limited growth potential. This will minimize mowing.
- Design the bridges for easy snow removal:
  * Incorporate automated brining systems.
  * Utilize heated decks.
  * Allow snow to be plowed onto the shoulders and bike paths.
  * Incorporate automated temperature sensing devices into the bridge deck.
  * Use ITS tools to warn drivers of icy conditions.
  * Initiate anti-icing measures.
- Use durable pavement markings, i.e., inlaid tape, quality reflective markers, etc.
- Consider maintenance in the design of subdrains:
  * Construct without fabric.
  * Extend outlets beyond mowing lines.
  * Increase outlet gradient.
  * Install durable outlets.

Geotechnical Ground Improvement

- Complete subsurface investigations early in the design phase: shale was found at 20 to 40 feet on the nearby Rock River Bridge project.

- Identify high-risk settlement areas and utilize settlement reduction methods as appropriate. They include the following:
  * Wick drains.
  * Lightweight fills.
  * Geofoam.

    * Foam concrete.
    * Expanded slag.
    * Pre-loading.
    * Removal and replacement of compressible soils.
    * In-situ improvement techniques (expensive).
    * Stone columns.
    * Geopiers.
    * Deep soil mixing.

Geotechnical Fill/Embankments

- In critical staging areas, use the following for temporary fill sections:
    * EPS.
    * GRS.
    * Big rock fill.

Foundations

- Perform tests during the design phase of the project. These include subsurface investigations and foundation testing.

- Design on a case-by-case basis, considering cost, construction time, traffic and adjacent structures. Incorporate the following as necessary:
    * Spread footings on GRS.
    * Spread footings on shallow rock.
    * H/pipe piles.
    * Drilled shafts.

Retaining Walls

- Use GRS walls, as they:
    * Cost less than MSE walls.
    * Tolerate settlements better than MSE walls.
    * Allow for rapid construction.

This project is very similar in many ways to the Woodrow Wilson Bridge Project near Washington, D.C. Project staff may want to consult with the Maryland and Virginia DOTs to learn from their experiences, especially in dealing with staging.

3.6. Structures

The structures team focused much of their discussion on the Mississippi River crossing, the adjacent approach structures and the tie-down points. They determined that accelerated construction would be the most beneficial where the relocated Interstate ties into the existing alignment:

Mainspan Bridges

- Build the superstructure offline. This would minimize impacts on river traffic and could be quite cost-effective. The superstructure could be constructed on barges without the deck, and the foundations could be constructed concurrently.

- Consider hollow precast foundation sections and infill with concrete. This could have a positive impact on aesthetics, and there would be less disruption to pleasure boaters.

Mainspan Approaches

- Use rapid construction techniques for the approaches. Rapid construction may not be critical to overall project completion.

Tie-in Points

- Consider a hyperfix for the tie-in locations (a 60-90 day complete closure of the Interstate at the tie-in locations on both sides of the river). Construction of approximately 200 feet of structure at each tie-in location would need to be accelerated.

- Handle traffic with the following:
  * Divert mainline traffic to City streets and then across the existing bridge. Note: if Interstate traffic will be diverted to the local roads, upgrades to these roads may be required.

  * Use ITS and public involvement tools to encourage people to use alternate routes.

Interchange Bridges

- Consider the many possible accelerated construction techniques applicable to the interchange bridges. They include the following:
  * Eliminating piers.
  * Using precast substructures.
  * Building the superstructure offline.
  * Moving the bridge into place using horizontal skidding.
  * Using precast decks.

Long-Term Durability

- Utilize materials that will perform well and last a long time. The following materials will provide long-term durability and may be applicable to the I-74 project:
  * HPC.
  * Low-permeability concrete.
  * Corrosion-protected reinforcement.
  * Weathering steel.

Retaining Walls

- Consider types of retaining walls that will help accelerate construction, such as:
  * MSE walls.
  * Precast gravity walls.
  * Precast cantilever.
  * Soil nailing.
  * Geofoam.

Rapid Bridge Construction Technology

- Utilize the following rapid bridge construction techniques at the tie-in locations and for the interchange bridges:
  * Precast piers.
  * Precast bridge decks.
  * Rapid bridge removal.
  * Rapid bridge change-out using SPMTs.
  * Rapid bridge change-out using barges.
  * Horizontal skidding.

3.7. ROW/Utilities/Railroad Coordination

The main message from the ROW/utilities/railroad coordination group was to start coordination with property owners, utility companies and railroad companies early.

Their message was that there is less of a chance for delay during construction if the work associated with ROW, utilities and railroads is done as early as possible:

ROW Needs and Activities

- Ensure that all parcels are identified early. This includes parcels needed for construction, construction staging, traffic maintenance, borrows, utility relocations, wetland mitigation, noise walls, retaining walls, etc.

- Begin full-scale ROW acquisition when the ROD is approved (at the time the plans are submitted to ROW).

- If possible, utilize advance hardship acquisition for total take parcels.

Procedures for Expediting Utility/Railroad Adjustments

- Complete an inventory of existing utilities and railroads as early as possible.

- Apply appropriate levels of SUE (ASCE 38-02). Without SUE, utility reimbursements risk higher cost.

- Coordinate lateral utility crossings. If possible, promote sharing of the same trench/box. This will reduce the number of utility crossings.

- Advance utility reimbursable interest notification. This will expedite agreement on the relocation of facilities.

- Use the same utility agreement for both States. The States' legal councils would have to review the agreements.

- Incorporate a fiber-optic bridge attachment into the bridge design instead of adding it later.

- Allow utilities to remain in place in the existing ROW, especially in the downtown areas where the Interstate is being relocated.

Major Project Issues

- Identify 4(f) properties (1-Iowa, 2-Illinois); determine impacts and possible mitigation solutions early. This will help identify any potential ROW impacts.

- Identify contaminated properties early in the process. If these properties are not found until the ROW process begins, there could be delays that affect construction.

- Look at possible utility relocation issues with the two communications centers in the project area. It would be beneficial to use SUE in these areas. Also, the underground infrastructure must be verified, even though the buildings are not being acquired.

- Begin railroad grade separation agreements early. The project team needs to determine if there are utilities within the railroad ROW and if the railroad will provide access onto their property to relocate them, if needed.

- Aggressively attempt to incorporate borrow areas with wetland mitigation needs.

Enhanced Project ROW/Utility/Railroad Coordination

- Ensure that the I-74 PMT includes ROW, utility and railroad disciplines from both Iowa and Illinois.

- Meet with all utility companies during the planning/phase development stages The first meeting should take place after the utility inventory (SUE) is complete.

- Involve external stakeholders in project issues/decisions involving local public agencies, railroads and private utilities.

4. CONCLUSIONS

The Illinois DOT, the Iowa DOT and the I-74 project team are evaluating the recommendations provided by each of the skill sets during their breakout sessions, assessing the potential benefits of each idea and its value to the overall project delivery. While the DOTs may not have the opportunity to utilize all of the ideas put forth by the skill sets on this corridor, a number of the ideas from the workshop have the potential to be utilized on other projects.

The Illinois and Iowa DOTs will be conducting additional sessions with FHWA to assess the long-term benefits of the workshop and the ultimate decision regarding each workshop recommendation for the I-74 Iowa-Illinois Corridor Study. Working sessions to develop the long-term scope of the project will be scheduled during the coming year.

LIST OF ACRONYMS

ACRONYM	FULL NAME
AASHTO	American Association of State Highway and Transportation Officials
ACC	Acid Copper Chromate
ACTT	Accelerated Construction Technology Transfer
AGC	Associated General Contractors of America
ASCE	American Society of Civil Engineers
ASR	Alkali-Silica Reaction
BIMRS	Bridge Incident Management and Response System
CAD	Computer-Aided Design
CM at Risk	Construction Manager at Risk
CPM	Critical Path Method
CRCP	Continuously Reinforced Concrete Pavement
D-B	Design-Build
D-B-B	Design-Bid-Build
DEIS	Draft Environmental Impact Statement
DMS	Dynamic Message Sign
DOT	Department of Transportation
EPS	Expanded Polystyrene
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
GPS	Global Positioning System
GRS	Geosynthetic Reinforced Soil
HAR	Highway Advisory Radio
HMA	Hot Mix Asphalt
HPC	High Performance Concrete
HPS	High Performance Steel
IT/ITS	Intelligent Transportation/Intelligent Transportation Systems
LOS	Level of Service
MIS	Major Investment Study
MOT	Maintenance of Traffic
MPO	Metropolitan Planning Organization
MSE	Mechanically Stabilized Earth
NEPA	National Environmental Policy Act
NHI	National Highway Institute
PCC	Portland Cement Concrete
PMT	Project Management Team
PR	Public Relations
QA/QC	Quality Assurance/Quality Control
RAP	Reclaimed Asphalt Pavements
RFP	Request for Proposal
RFQ	Request for Qualifications
ROD	Record of Decision
ROW	Right-of-Way
RPMs	Raised Pavement Makers/Markings
RSCH	Repeated Shear at Constant Height
RWIS	Roadway Weather Information System
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SCC	Self-Consolidated Concrete

SEP	Special Experimental Project
SIP	State Implementation Plan
SIP Forms	Stay-in-place Forms
SPMTs	Self Propelled Modular Transporters
SUE	Subsurface Utility Engineering
TIF	Tax Incremental Financing
TIG	Technology Implementation Group
TRB	Transportation Research Board
TSA	Transportation Security Administration
TSP	Thrift Savings Plan
VMS	Variable Message Sign

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C -SKILL SET RECORDING FORMS

SKILL SET RECORDING FORMS

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CONSTRUCTION SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Contracting - Size and Number		
One mega super project	Make the entire length of the project a single super project.	• Davis-Bacon requirements (they vary by State); union requirements; not politically popular.
One mega project plus outlying areas	Let bridge and approaches as a single project.	• Davis-Bacon requirements (they vary by State); union requirements.
Three large projects plus outlying areas	Let five contracts. Bridge would be one contract; each approach, a separate project; key areas (downtowns and bridge) must be done simultaneously.	• Smaller contracts tend to save money…are politically inviting.
Construction Staging		
Contractors' input on staging	Consider a modified D-B concept – solicit contractor input on staging and constructability issues.	
Outlying areas done first	Treat north of downtown Bettendorf through 53rd Street and south of downtown Moline to Avenue of the Cities as independent projects. They can be done under typical methods.	
North tie-in: downtown Bettendorf	Alter downtown Bettendorf: combine the one-way pair (US 67) with a temporary tie-in to the existing structure. Limits Brown Street to the bridge.	• Skill set coordination: ROW, traffic safety, structures.
South tie-down: downtown Moline	Alter existing 5th Avenue to abutment south of 7th Avenue. If the State would close the Interstate to reconstruct the 7th Avenue ramp, then they could use a temporary ramp past Avenue of the Cities.	• Skill set coordination: traffic and PR. Need to discuss the impacts associated with the northbound 7th Avenue ramp closure.

CONSTRUCTION SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Bridge construction least critical	Do not need to accelerate construction, because reconstruction of the bridge is dependent on the downtown reconstruction. Consider single bridge versus dual for tie-in to allow cross-over during construction and if needed in the future.	• Skill set coordination: structures.
General Contracting		
Contractor staging	Use the parking lot between northbound/ southbound Illinois 92 for contractor staging in Illinois.	• Skill set coordination: ROW.
ROW	Acquire ROW for the new northbound 67 ramps for staging in Iowa.	• Skill set coordination: ROW.
Structure versus fill through downtown	Consider structure versus fill – rather than variegated (fill-structure-fill) through the approach areas. Consider the PR impacts of the aesthetics and the long-term maintenance requirements for differential settlement.	
Project Management		
Formal partnering	Advocate a formal partnering agreement with a defined conflict resolution process.	
DOT project manager	Utilize dual project managers.	• Have one Iowa/Illinois point of contact with project offices in both States.

Innovative Contracting / Financing

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INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
D-B		
If financing wasn't an issue	Consider options for funding construction. D-B provides more options; the contractor has more latitude; he/she chooses construction type; etc. More cooperative.	• Need legislation to allow D-B (project specific-IA). Contractors have more resources available, i.e., workforce. How involved the States want to be is a factor; too much involvement can inhibit progress. Cost is not the main driver. Project delivery time is faster; in some cases D-B can cut costs.
Alliance contracting	Consolidate environmental and ROW contracts.	• Create a team; set a target price with a fee on top of that; provide an incentive to stay under the set price. If you use the incentive to fix things with, you lose control. There's not a lot of public involvement; changes are sensitive under D-B. The development process is 35 percent complete, the footprint is set and the corridor limits are established. If you go outside the footprint, it is the contractor's responsibility.

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
D-B	Transfers risk, provides overall help. While it doesn't necessarily save money or give better quality, it does shorten the project delivery timeframe.	• Cost effective: award is based not only on price. There is less disruption of traffic. Can provide merit points on aesthetics. Strong public involvement is a challenge. The contractor can make decisions with responsibility for risks. The ability to get this project done quicker is there, but the funding is not: we don't have funding currently available, so D-B is a theoretical concept. To the Illinois abutment would be the limit of the D-B. If Iowa were to get legislative approval, you could go incrementally down the line based on partnering between the States. Illinois would likely be in favor of this.
D-B: operate and maintain without charging tolls		• Another party would build but would expect payback through bonds or State appropriations; more needs than money; public/ private cooperation.
Shifting risk		• Shift risk to the contractor as far as staging, public involvement, etc.; currently rigid in approach.
Working with local agencies (D-B)		• Require contractors to deal with the local agencies. Once contract is set, it can't be changed: the footprint is set. Beyond the footprint is the contractor's responsibility to negotiate.
Disadvantages to D-B		• State gives up control; States must have the money up front; local contractors may feel a disadvantage in getting the work, public involvement is more challenging, there is concern that D-B is a violation of the Brooks Act (qualification versus low bid).

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
State DOTs and D-B		• Need to look at the RFQ/RFP process. The qualifications set forth various standards; must set forth ahead of time how you're going to award the contract based on the proposals; standard procedures must be used. Plug what you value into the RFP.
Proposed ideas: D-B		• Bidders would receive a stipend, and we would own their ideas to give to the successful bidder.
Staging/Packaging		
Staging		• Must be a corridor-level effort. The media and the public are interested in the river crossing; public involvement is focused on the river bridge to the detriment of the rest of the corridor. Davenport is focused on the 53rd Street exit. Must build a good coalition with parties on both sides of the river.
Independent utility projects		• Need to get money earmarked for these pieces. Be sure to include public involvement so that the public understands this is a funding issue; slowly integrate it into the bridge.
Bridge condition	Bridge condition is not driver for replacement.	• Both bridges are similar; structural condition is not driving cost; a functional aspect is driving the project. This is an operational issue: maintenance on the bridges (extended maintenance) is costly.
Secondary impacts	They flow across bridge.	

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Financing		
Earmarked money	This money is for preliminary engineering and final design.	• The bulk of the money has some ties to the structure itself. There is a mix of funding (TSP, corridor funds, structures dollars), but it is still a fraction of what is needed. Public officials are earmarking specifically for the Mississippi River crossing.
50/50 cost structure and approach	Coordinate between the States.	• States are in the process of establishing boundaries due to approaches.
Regulated bonding	The size of the contract is an issue.	• Typically there are not multi-million-dollar contracts in Iowa. This is comparable to other States. Iowa/ Illinois contracts are smaller. Keeping it smaller will attract more bidders. The paradigm for Iowa is smaller contracts: breaking up contract would be better for Iowa but may not be the best for the Quad cities. If the funding is not there, you can't offer one large contract anyway. Larger contracts are more common in Illinois.
Bonds	Consider Garvee bonds, bonds issued on revenue, gas taxes, etc.	• Legislative approval and voting of the people are issues. Could bond against your own gas tax. It's more difficult to sell bonding than tolling because it is not a State-wide issue; bonding for I-80 border to border would be easier to sell. You would have to bond for a statewide improvement.
Financing	Need to determine if we can get the money and how much we can spend.	• Time, quality and dollars are issues, as is the priority of projects.
Bonding with insurance		• Provides for faster design and completion. Would need to establish a toll authority to make decisions.

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Tax increase and tolling on local community	Consider for the I-74 corridor/east bridge.	• Is there a strategy to issue the bond and shadow toll? Depending on government structure, the two governments would need to work together and package the two bridges together. From a capital market point of view, this would be more profitable. The turnpike authority would need to be a sub-organization of the DOTs; a local taxing authority was tried in the past.
Local funding		• Locals have been made aware that money is needed to fund this project; they've been going after earmarked funds. Could leave it up to the locals to decide if revenues can be generated for I-74; tolling would be a no-revenue option. Could take a vote to the locals as to when they want the bridge up.
Tax increment financing		• Use additional revenue coming from specific areas.
Dedicated increment of fuel tax each year		• Use specific taxes for specific projects.
Tolling		
Keeping contracts local		• Larger contractors would likely sub out to local contractors, keeping the work local.
Duration		• Note that the river bridge is less tied to traffic; the approach is more tied to traffic. Makes for more complex duration and staging.
Corridor	Maintain similarities.	

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Optional combination	Offer all the separate contracts and then one large single contract.	• Consider combining the contracts into one contract – this hasn't been discussed. Staging and constructability are issues; traffic control would need to be coordinated. Past experience shows that putting contracts together increases the price but improves the schedule. Iowa contractors are more craft-orientated. There have been problems getting bidders in the Quad Cities area for small contracts. • Allow contractors to bid the whole project or bid small components of the project; makes the competition better and the bidding lower.
Getting bidders	Consider a larger contract/one complete contract.	• Would attract national bidders; more expeditious.
SEP 14/15		• Consider 14-contract methods, 15 financing.
Size of contracts		• $300 million might be $700 million. Start with a 40 percent contingency, which drops through more engineering information.
Illinois/Iowa edge of river		• This is not intended to be buildable as a separate contract. Take the approach out from the bridge structure and bid it separately. Innovative contracting should be part of the initial plan and not be left to the end.
Interchanges north and south of bridge		• Combine to one contract to facilitate coordination and scheduling. There would be one contractor to answer to the public rather than two contractors deflecting heat back and forth.

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Financing Options		
Cash reimbursement option	This is traditional law from the two State legislatures.	• The funds would be released in increments. This is a viable option for Iowa and Illinois (in Illinois, would have to work way up the priority list).
Tolling the bridge portion	Start now on the current bridge or later on the new bridge.	• The Iowa DOT has the authority to toll structures: need to define the structure span, abutment to abutment, approach to approach – negotiations can be made and limits revised. IDOT also has this ability. The remainder of the corridor could be funded with appropriations. • Implement a small toll on the current bridge, committing to upgrade with a future bridge. If you put a toll on the bridge now, you give up the authority to have a toll authority in the future. Also, if you choose the toll option, it kills local funding options for sales and gas taxes. • If the legislature establishes the toll, a multi-State authority can be achieved. • There could be a backlash from reinstating toll bridges after doing away with them.
Toll bridge privatization		• Bridge would be owned and tolled privately. A privately-owned, operated and financed facility (either a 99-year lease or an outright purchase) tends to operate more efficiently, and there's a guaranteed revenue stream.
Sales taxes, tax increment financing	Utilize a tax increment plus annual appropriations.	• This would require a State/local jurisdiction partnership and a system approach. Consider a partnership with two bridges (exclude the 67 bridge).

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Bonding against gas taxes, Federal grants statewide		• Bond would be based on State revenue based on gas taxes, Garvee, TIF, Federal monies, etc.
Earmarks		• How much more can we get from earmarks? Use the average of past earmarks for future planning.
Miscellaneous Topics		
Iowa DOT 15 years from now		• This is not a "top five" project for the Illinois DOT. The Iowa DOT also has other Interstate projects that rank higher than this project. Would need a billion dollars to fund this project. Other projects of this magnitude have been done without tolls, bonds, etc.
Riverfront development impacts		
Materials for bridge		• There would be significant savings from not constructing a steel bridge; there's still room for innovation.
ROW		• Final design is not needed to get ROW plats; ROW would be working concurrently with final design. Historically Federal aid has not been used for ROW, but this has changed recently with earmarked monies.
Options for pre-bid meetings		
Economic influences/ safety drivers		
Construction manager		• Do the design and hire the contractors; the manager has incentives to maintain a certain fee.
International financing		• International bridges are mostly privately owned and maintained.

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Purpose and need		• Discuss the need to improve alternative routes, the current level of service, future development and detour options.
Roadway construction first		• It's harder to justify money for bridge; better off to construct the bridge first.
Schedule		• Determine how funding affects the timeline.
Expediting contracts		• Iowa does not have a lot of experience with A-plus-B contracts. Weekend closure may work. Consider a hyper-fix (60-90 days, an alignment tie-in between old and new). Need modification to NEPA documents, options to bring to a public meeting. Staging traffic off of the mainline would expedite construction; from legality of the NEPA document, staging is not an issue. The requirement to keep the bridge open during the project has been set (set prior to the project).
Minimizing influence on traffic		• Designate a corridor traffic manager to work between the two States. It is critical to project success that this is viewed as one project being done by one team.
Project management office	Designate an I-74 project engineer with access to people at all levels, he/she would coordinate all corridor activities with the executive team.	• Utilize a project web page and phone line. Hire a PR firm to staff the office and communicate with residents and media. One person needs to be accountable for the entire project; need for both States to be involved and report to the executive committee. The committee should consist of members from both States.
Contracting	Let several small contracts with the option to tie them together into one contract.	

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
	Bid substructure and superstructure separately.	• Build for the long-term with future expansion possibilities.
	Include long-term maintenance in the contract.	• This includes pavement maintenance, bridge maintenance and snow removal. Use warranties. Remember that construction funds cannot be used for maintenance contracts (not currently).
A-plus-B		
Performance management specs		
Safety incentives		• Look at contractor's operations in disrupting traffic through performance specifications. If the accident rate goes down, the public benefits. Focus the contractor's thinking on safety. Side road traffic should not be included, as it's more variable; focus on the mainline only or the entire project.
Environmental Incentives		• Address erosion, water quality, etc.
No excuse bonus		• Federal aid cannot be used. The bonus is awarded if the contractor can complete the project within the specified timeframe. Make it an incentive/disincentive, and use liquidated damages.
CPM scheduling		• Update monthly and implement.
Quality-driven performance-based specifications		
Design alternatives		• Not using.

INNOVATIVE CONTRACTING/FINANCING SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Prequalifications		• All contractors are prequalified to bid on Iowa DOT projects. Iowa uses an extended advertising period for larger jobs with no mandatory pre-bid meetings. Select pre-bid meetings are not mandatory. The Iowa DOT allows confidential bidding and holds constructability meetings. Talk to AGC and advertise. Anything discussed is distributed to all contractors.
Materials acceptance		• Use QA/QC specs for asphalt, structural concrete, embankments.
Dispute resolution process/escalation procedures		• A way to escalate conflict on projects (partnering) has been established but has not used lately; need to have a mechanism in place to keep issues from festering and get them resolved in a timely manner. Put this in the contract using timing as an issue.
Multi-parameter bidding		• Consider A-plus-B, providing pay award to enhancements for quality; A-plus-B-C (C being a warranty).
Bridge construction		• Iowa DOT likes to be able to replace decking; looking at different material options (steel, concrete, concrete filled steel); considering expandable shoulders.

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TRAFFIC ENGINEERING/SAFETY/ITS SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
ITS	Utilize the proposed ITS technology.	• Proposed action includes full-coverage cameras; traffic sensors; incident management tools such as special technology for bridges and automated alerts (pagers, email); a permanent two- to nine-mile radius AM; 511; public communications; media promotions; implementation of a formal communications plan; DMS; and installation of a fiber optic cable between 911 centers to enhance communication between Illinois and Iowa. There will be no traffic management center at the 911 centers. Utilize existing ITS and add it to the I-74 project. There is a good working relationship between Illinois and Iowa. Incorporate snow removal and heated pavement.
Command center	Establish a traffic control command center for construction and beyond.	• Need a command center during construction. The center should not limit its focus to I-74 but should also include connecting streets. Do we need this manned 24/7, or can this be manned by the 911 centers during off hours? We need it for reconstruction, and it could be used after. Also need to develop highway helper program; look at Omaha/ Council Bluffs, which is a multi-State volunteer program. ITS after construction could be helpful in incident management.

TRAFFIC ENGINEERING/SAFETY/ITS SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Utilize ITS	Develop ITS with the project plan.	• Both the media and the public need to have information about what is available from ITS. Need to implement the current project as planned: the communication backbone is very important. Deployment is to begin in mid- summer 2006 and be complete during the next construction season. There are concerns on how to implement given the number of municipalities and the two State agencies involved. There are incident management plans and mutual aid agreements in place. Need to establish cameras on adjacent bridge to know what conditions traffic is being sent to. There are good communications on one side or the other, but we need to improve communications across the river. There is cooperation among the police departments, but we need improved communications in engineering and other disciplines. Currently there is not a plan for long term support.
Alternative transportation	Provide alternatives for crossing the river during construction.	• The goal is to reduce demand on the system. Promote park and ride facilities and shuttles for special events. Park and ride facilities have been developed at churches/shopping centers and could be used for tourism. Utilize coordinated public transportation systems across the river during construction. Include commuter/employment incentives. Incorporate cross-bridge links.
Long-term plan	Keep the long-term goal of implementing ITS beyond construction.	• A need for ITS will still exist for incident management and for use during special events.
Coordination		• One of the strengths of the project is the amount of coordination that has occurred to date. The ITS timing is good. Framework for communication collaboration will be key. Internal and external coordination with stakeholders is vital.
MOT/safety		• Both States need law enforcement and feedback with fines in work zones in Iowa and Illinois. Illinois posts safety and enforcement numbers. Develop safety target message, such as “target zero.”

TRAFFIC ENGINEERING/SAFETY/ITS SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
MOT	What are the expectations?	• The goal is to maintain two lanes of traffic in each direction during construction. Some ramps will have to be closed. Are there times at night that a lane could be closed? That was done for existing maintenance with few complaints. Iowa has some experience with further lane closures on I-235 in Des Moines. There are concerns about special summer events. Need to plan for events in conflict with night or weekend (off hour) construction. Need a coordinated traffic management plan for both States, both during the project and after. Need park and ride buses or shuttles for special events, especially for events at the Mark. Diversion to another bridge is a long trip given the number of crossings. Need to establish a plan for special-event traffic control. Portable message signs could be used to help direct traffic. Also, need to coordinate signals to help move traffic on alternative paths: currently, there are no cross jurisdictional signal interconnects. Utilize NHI classes for joint Illinois/Iowa services. Need to know how the responders will access an accident in the construction area.
Contracts for MOT	Set up incentives to improve contractor performance.	• Contractors could have to rent lanes: every time a lane is closed, they would be charged to encourage minimal lane closures. Include incentives to improve safety in work zones. Use cameras and displays that show speeds. Could also use dynamic speed limit signs that change for key times. In Illinois, there are restrictions on enforcing changeable speed limits. In Iowa, there are limited times for delivering materials. During the delivery time, Iowa uses signs that state “watch for trucks.” Include MOT standards in contracts. On large projects, have monthly coordination meetings. Main part of payment schedule is to set it up based on uninterrupted traffic. Allow for a certain number of closures (time of day considerations) and, if this number is exceeded, then penalties occur. Provide safety incentives for contractors and DOT people for workers and employments. Include dates when there are no closures due to special events. Separate workers from traffic.

TRAFFIC ENGINEERING/SAFETY/ITS SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Work zone safety		• The goal is no worker injuries. Engage the public in awareness and their role. Need to have contractor training and flagger training. Flaggers have been overly aggressive, resulting in stoppage of traffic rather than just slowing it down. Need to separate traffic from the workers. Plan for contractor buy-in by establishing incentives or penalties. At this time there are not many incentives or penalties; this is based on more of a business model. Some count the number of incident-free zones. Establish criteria for how workers enter and exit the work zone. Create a standard for work zones to have continuity in driver expectations. Need to have one set of traffic control standards between Illinois and Iowa; this also helps with driver expectations. Need contractor and DOT training, preferably at the same time so that everyone hears the same thing.
Construction phasing		• Coordinate the construction of interchanges so that adjacent interchanges are not closed concurrently. This could have implications on design. Need to engage MPO in planning the construction phasing. The MPO could assist with engaging the local jurisdictions and gaining buy-in. Coordination with local jurisdictions on local projects is also key. If possible, have improvements to the local roads complete before I-74 construction so that they can be used as diversion routes.
Corridor-wide traffic coordinator	Designate one person to coordinate traffic management.	• It works best if this is someone from the contracting authority. This could be contracted out to provide coordination (work through the project manager). Need a project manager just for this project. There needs to be one person for the whole project (on both sides of the river). Need to coordinate with other jurisdictions.
Identifying stakeholders	Coordinate dissemination of information.	• Need one person to coordinate public involvement activities. Have a project website that is linked to the ITS system for real-time information. Need to keep the website up-to-date, i.e., I-235 and Rock River Bridge.

TRAFFIC ENGINEERING/SAFETY/ITS SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Pavement markings	Consider temporary and permanent pavement markings, signing and lighting.	• Consider using wet reflective tape, with special emphasis on nighttime operations. Consider extensive use of portable DMS. Look at signing opportunities with ITS. Incorporate holographic pavement markings/signs. Utilize 3D/4D modeling for traffic staging to identify conflicts. Need high-performance pavement markings that will withstand snowplow operations. The markings will also need to be moveable. Identify the solution that is appropriate for the season. Also want to minimize the "ghost markings" or pavement scarring. Aim for high-quality, wide pavement markings inconsideration of older drivers.
Comments from morning session		• Utilize tie-ins and complete closures (hyperfix). Single source and coordinate priorities. Have mass transit available for the duration of the hyperfix. There is a political barrier to D-B; it is illegal in Iowa. A hyperfix would create a safer work zone but more crashes on local system. Example is I-74 in Peoria and the logos that were used to delineate the alternative routes. There are concerns with drainage during construction; this could create safety problems.
Safety		• Address water control and continuity between Illinois and Iowa. Maintain work zone standards through driver expectations, staging and construction access, pull-off space (steer it and clear it), and public education.
Topics to mingle with		• Need a definition of the project manager (structure or management) and who resolves design issues that need answers immediately (decision authority). Need to establish communication plan. What goes on the web (traffic information, PR, etc.) officially falls under construction but actually falls into many of the skill sets. Need management structure in place prior to construction. Address pavement markings with maintenance.
Public information		• Provide education at casinos, game wheel and prizes. Have a lotto ticket. Use "Jack Hammer" to put a face on workers. Consider the I-235 promotion of three S's (speed, space, seatbelts). Target the front page of the newspaper (updates, routes) similar to weather info.

TRAFFIC ENGINEERING/SAFETY/ITS SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Public involvement mingling		• Establish a relationship between the transportation reporter and the project manager for regular updates in the newspaper. MPO provides information on local projects (including State projects). Hire public information expert to work with PR contacts and deliver messages. Design billboards and place in ROW. There are concerns with tying gambling with construction.
Construction mingling		• There is the problem of new alignment and old alignment between 5th and 7th on the structure. Only problem is the northbound off ramp at 7th Avenue. Could use Avenue of the Cities as the northbound ramp in Illinois. The problem is how to get traffic across Avenue of the Cities. Another key issue is when we switch from the old bridge to the new bridge (two tie-ins and traffic management). Question for the construction group is do we need to have an overall construction manager.
Safety incentives		• On the "big dig," the contractor is allowed to earn a bonus each time they reach the maximum safety goal (employee with hard hat, iron worker clipped in). The full bonus is awarded for a week with no incidents; it's pro-rated down by the number of incidents. This was a no-carry-over bonus.
Traffic control incentives		• The Arizona DOT monitors licenses plates, and cars can be tracked when going through a work zone. The contractor is rewarded for maintaining a certain level of service. This is a monthly bonus that does not have carry-over. License place numbers would need to be blanked out of data reporting for privacy issues. Could also track via cell phones or toll tags.
Geotech, maintenance and materials		• Are there plans for highway helpers? Will there be enforcement speed signs? We talked about that some and identified potential changeable speed signs. Need to incorporate visible enforcement. Need to have different traffic control devices because the elevation of the roadway will be changed. We would like to have a consistent standard. Need to make exits clearly visible and have appropriate pavement markings. Temperature sensors on pavement are included in the ITS project. Could go with a two-phase construction to cover temporary pavement markings and to eliminate joint lines.

Public Involvement

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PUBLIC INVOLVEMENT SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
ITS (personal Mapquest)	Use software or program to plan trips or routes from a public website.	• Setting boundaries, setting up the system, addressing the learning curve for users, using it on a home computer off the public website. There could be problems with GPS not being integrated into construction. 511 is not updated quickly enough.
Staffed project office	Set up a staffed location at the mall or a local area for people to come, learn about the project, and receive maps and trip advice.	• Post ROD: use two people from 8-5, and have updated progress pictures.
HAR	Broadcast construction and project information on the radio.	• There are problems with frequency changes and boundaries. Check with the ITS group.
Real-time traffic	Use cameras and overhead message boards.	• Need to know detour routes and provide for advance planning so that individuals can make route choices. The cameras feed to the communication center, and information is fed back to the public. Traffic information providers are good source contacts. Work with incident management team. Provide for weather channel/traffic reporter coordination (ticker).
Public access television		• Use to show project videos and local traffic reporting service information.
Construction call-in line		• Have it be different than the current 800 number, and encourage callers to leave a message. Promise a call back within 24 hours. Provide information a week ahead. Have regular traffic updates.

PUBLIC INVOLVEMENT SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Breakfast with officials	Schedule regular (bi-monthly) breakfasts with officials.	• Host a breakfast once every two months with key elected officials from both sides of the river.
Project spokesperson		• Have the person on site at the project giving guided construction tours.
Guided construction tours	Offer boat tours.	• Use a water taxi or channel cat (consider renting for guided tours under the bridge.) Would be seasonal. Target politicians, families, school groups, etc. Have the project spokesperson on the boat.
Title VI targeting Hispanic groups	Target the Hispanic population.	• Use schools and churches to get the word out; produce the project newsletter in Spanish.
Conversion of website from English to Spanish		• Is not easy or cheap but is possible with a button click once it's been implemented.
Subsidized mass transit		• Make the price of transit $1 during construction; have park and ride set up to accommodate additional commuters. Make arrangements with commercial facilities (Target, for example) to utilize parking lots for overflow or carpoolers. Could provide incentives for businesses as well as carpoolers. Could be issues with a carpooling incentive when there is only one lane during construction. Need to convince people that mass transit is as good as driving themselves. Need to inform them of the worst-case scenarios and get people to understand the congestion/traffic they will experience.
Bridge bucks	Provide monetary incentive through employers to use alternate modes of transportation to get to work.	• Provide incentive through bridge bucks. Get employers involved, and prove the point by driving back and forth from point A to point B. Encourage people to carpool or use alternate transportation. Work with public transportation agencies, too.
Business hour changes	Promote morning work hour adjustments.	• Work with large employers to change work times to accommodate construction.

PUBLIC INVOLVEMENT SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Project slogan		• Consider a brand for the project.
Pre-planned routing	Provide pre-planned routing through signal timing modifications.	• Work with communities to get alternate routes timed to eliminate potential delays caused by additional traffic on the system; coordinate with barge for notification of barge traffic at Arsenal Bridge. For IT hookups, switch to light message board letting people know that the barge is coming. Use pre-recorded messages on boards. Change messages when appropriate.
Mass transit	Help mass transit better promote itself.	
Management of traffic expectations	Provide a public traffic scare.	• Scare the public to use alternate routes and mass transit by providing worst-case scenarios and traffic projections. Force people to use alternate routes, and prepare them for contingencies. What goes better will make them happy.
Pieces of bridge		• Sell pieces of the bridges as souvenirs as they're torn down.
Bridge fact sheet		• Create a one-page fact sheet detailing why the old bridges must come down.
Project giveaways	Create giveaways for the public with the project logo or slogan; gesture of good will.	• Make giveaways (keychains, foam "pressure" toys) part of the contract. They could include the construction phone number and website address.
Adopt a School	Partner and "adopt a school."	• Explain job opportunities; take the kids on a tour on a channel cat so that they can get closer to the stockpile and staging areas. Needs buy-in from contractors and DOTs. Target areas: schools, YMCAs.
Ways to Utilize Corridor Design Team		
Specialty spokespersons	Utilize individuals with specialized experience who are also media savvy to get the message across.	• Have training in place for local experts. Avoid miscommunication with public and "bad" sound bites.

PUBLIC INVOLVEMENT SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Community ownership	Ask citizens to donate/buy piece of the old bridge or donate for the new bridge.	• Could have their name on a stone or brick and designate that their money be used for specific purpose. Honor veterans, etc. An example is fourbearsbridge.com.

Geotechnical/Pavements/ Maintenance

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GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Soil types	Recognize that soil types in the area will dictate design elements.	• There is deep sand below the river and bedrock to approximately 100 feet. • Glacial till and clay occur on both sides of the river, with alluvial silts closer to river. • Shale at 20-40 feet was found nearby at the Rock River.
Proposed design	Address the number of proposed bridge structures.	• Look at the structures on the Illinois side. • Recognize that four structures on the Iowa side, not including 53rd Street, will likely be kept. • Decide on the Mississippi River Bridge. • Prepare for nine new bridge locations.
Goals of group		• Identify new methods and materials. • Incorporate performance specifications. • Minimize pavement noise and settlement times. • Reduce snow maintenance. • Provide for long life pavements (50 years).
Quarries	Determine what the nearby quarries hold.	• There are limestone and dolomite quarries nearby. • 3-I aggregates are suitable for 30- to 40-year pavement design lives. • With good aggregates, expect a 40-year design with the local freeze/thaw cycle. • Consider construction-related issues with over-vibrating in the past. • Look at fine aggregates (Mississippi sand). • No problems with ASR.
Pavement types		• PCC pavement is likely. • Consider long life pavements.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Aggregates		• Have experienced problems with porous aggregates and cherts.
Existing pavements	How will/do they hold up?	• Most older and problem pavements have been replaced. Most were thin by modern standards. • Over vibration has been a typical problem due to an overly-sticky mix. Over-vibration causes a reduction in air voids and leads to rapid deterioration. • New specs tend to hold up better than older specs.
Span of bridge	Need a 710-foot clear span.	• Is less than existing span of approximately 750 feet.
		• Modeled span in Kentucky using a barge simulator. The determination is that the existing span is essentially the minimum needed today. This has influenced bridge type selection. The truss bridge was eliminated by aesthetic and maintenance issues.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Settlement/Settlement control	Consider existing settlement problems.	• Can't discuss settlement too much without boring logs. It's the same with walls and the existing foundations. • There do not appear to be settlement problems on the existing roadway.
	Determine if there are large fills.	• If there are no large fills, there will not be as much settlement.
	Utilize accelerated settlement techniques such as lightweight fill and wick drains.	• Pre-load fill areas as soon as possible to allow for settlement. This is less expensive. • Consider lightweight fills such as geofoam, foam concrete and expanded slag. • Note that the lightweight fills do not respond well in flood conditions. • Remove and replace compressible soils. Consider in-situ improvements of the compressible soils: utilize geopiers or stone columns. Stone columns facilitate drainage, but they are expensive.
	Address settlement over culverts and trenches.	• Need to control settlement, particularly at these locations.
Water table		• Not expected to be high around here.
Geopier versus reinforced soil foundation		• Consider using a reinforced soil foundation: it out-performs the geopier, settles more uniformly, is quicker and less expensive, and provides for uniform settlement. • Remember that reinforced soil foundation is an engineered fill.
Design life of pavements		• PCC design life is 40 years, including an overlay at 20 years. • Longer deck lives are currently being looked into on other projects. May want to investigate these methods. • High-performance concrete was used on the I-235 structures. • The owners should consider optimizing the gradation of the mix regardless of PCC or ACC.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Existing I-74 pavement		• An overlay was done in 1991 or 1992. • Owners should consider an analysis of the pavement on the bridge deck to determine how well the pavement has held up. • Generally, the States try to recycle the asphalt and use it as a trainable base. • States probably won't be able to use recycled asphalt on the mainline due to the use of slag and polymers. They may be able to use it on side roads and shoulders.
Local mix	Determine the optimal mix.	• There is a local source of steel slag that is used relatively often. • The modified binder is 70/28. • Consider a 12-inch improved subgrade layer and as much as 2 feet of base. Could crush existing concrete to C6, add fabric if open and cap with three-inch fillings of RAP material. • Drainage is most important in pavement life and design.
Composite mix		• Have had bad experiences with CRCP.
Construction speed		• Recycle pavement in place. • Address staging issues: staging is key to recycling in place. However, there may be limited usage for RAP on this project. • Is doable: local contractors have the ability to recycle in place. • Rubblize existing pavement with asphalt on top to speed construction.
Aggregate		• Iowa typically uses crushed dolomite.
Staging		• This project mirrors a project near D.C. (Woodrow Wilson Bridge). May want to consult with Maryland and Virginia about staging issues.
Layers		• Need a pavement support layer (subbase) and a subgrade layer. Combine these layers into one layer of about 12 inches.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Geotextiles		• Iowa DOT has not used geotextiles in the past. However, IDOT may be open to using these in the future. IDOT has used geogrid in panel walls. • Geotextiles are a big advantage: they facilitate drainage and separation and are very inexpensive. • Must keep the fines from flowing into the geotextile.
Recycling of pavements in place		• Do not want to see fines in the drainable layer on this project (or at all underneath pavements).
Pavement noise	Reduce pavement noise.	• Consider longitudinal tining. • Use noise quieting technologies: HMA is quieter. • Consider an open graded asphalt mix to reduce noise, though there is a lot of maintenance with this mix. • Make the pavement sections thicker. It is more expensive but adds longer life. Consider CRCP with a wearing course.
Subdrains		• Do not use fabric with subdrains. • Extend subdrain outlets around the mowing line: they are being crushed by the mowers. • Need a longer drop to speed the water velocity from the subdrain to the outlet. Now it is only six inches in 20 to 25 feet. Deep ditches may help to speed water velocity (cleaning drains) from the subdrain to the outlet.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Snow removal		• Could see an increase in crashes on the bridge approaches due to higher traffic speeds without ice on the bridges. • Expedite ASR. • Avoid the use of anti-icing-susceptible dolomites. • Heat the bridge decks or snow storage areas. • Allow snow storage on the shoulders and bikeway, as they are not being used during snow conditions. • Implement automated temperature sensing devices in bridge decks to 1) warn drivers of icy conditions, and 2) initiate anti-icing measures. • Use geothermal heat. • Consider double bridge decks for snow removal.
Cements		• Type 1 and 2 are readily available and likely to be used.
Pavement marking maintenance		• Avoid the use of tapes, unless grinding is used. • Use pavement markers that cannot be peeled off by plows. • Remember that tape does not give the visibility of reflectors. • Use better quality castings for RPMs.
Maintenance		• Use paraffin to repel graffiti. Coarse textures on walls are not preferred for graffiti. • Design/build/maintain. Let the contractor clean the drains. • Check out Highways for Life: they may provide the opportunity for increased maintenance funding.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Materials		• Verify the steel grade to be used: 50, 70 or 100 grade. Vibration problems using 100 grade have been observed. It might be better to use 50 or 70 grade steels. • Consider high-performance weathering steel (A710, Grade B). It is available in both 50 and 70 grade. • If the bridge is painted, choose a bridge color that is not susceptible to fading. • Use new ideas in limited applications to observe performance. Research previous use and applications. Utilize the technology that has been tested but not used (practice is 20 years behind technology). • Look at steel fiber in concrete. May increase tire wear. • Use modular decking to accelerate construction. Limit cast-in-place.
Materials	Use reinforcement bars.	• Consider weldable reinforcement bars, either epoxy coated or bare, like Illinois uses. See spec A706.
Foundations and retaining walls		• Consider using a shallow foundation: it's 1/3 the cost to install and should be considered in locations of no water and good soil. Note: Illinois has made an effort to remove spread footings. • Use geosynthetic reinforced soils for retaining walls. • Load test during the design phase. • Evaluate dredging hydraulic fill as an option for the embankments.
Cost and life cycle considerations	Determine the expected life of the project.	• Remember that the public may accept higher initial costs for a higher-quality product. However, the functional life of the project must also be considered. • Determine whether four lanes in each direction on the bridge are necessary.
Existing bridge footings		• The bridge is situated on spread footings. Bedrock is not extremely deep at this location.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Contract group suggestions	Address job/project size.	• Limit the size of the projects to $30 million. The smaller the job size, the more contractors that can bid, lowering the cost and potentially allowing more local firms to get the work. May have trouble breaking the project down into many $30 million projects. Also, local firms are often not big enough to take on large projects anyway. • Consider tied projects (optional).
	Design/build/maintain.	• Use warranties and factor in long-term costs. • Conduct field trials of construction materials before implementation. • Provide for QA/QC implementation and oversight.
Structures group suggestions	Determine bridge type.	• Expect brine on the bridge. Select building materials and design accordingly. • Determine bridge type preference.
	Select bridge materials.	• Depends largely on bridge type. • Determine if there's a preference for the use of box beams on the crossroad structures. There've been some bad experiences with older box beam structures. Grout keys accumulate moisture, need better cover, etc. • Evaluate whether cost may be a benefit of using box beam structures. • Consider dual design for smaller structures and approaches.
	Incorporate corrosion protection.	• Select a high-corrosion protection package. • Use a spray-on poly-urea coating for concrete and steel. Use low permeability concrete, weathering steel or coated rebar.
Structures group suggestions	Select walls/foundations.	• Look at shallow foundations to reduce costs. • Use a modular block face or full height panel with GRS walls. • Load test during the design phase. • Investigate options for heating the deck (geothermal).

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
	Coordinate with traffic group.	• Link temperature detectors with ITS applications (message boards).
Public involvement group suggestions		• Provide for aesthetics on walls. • Consider fadability when selecting the bridge treatment. • Recognize that controlling aesthetic treatments or providing maintenance may be difficult.
Construction group suggestions		• Note that delivery of pre-assembled materials by barge is dependent largely on bridge type. • Determine whether the construction group has issues with the GRS walls and field trials.
	Minimize vibration and noise.	• May have to limit working hours in residential land use areas. • Use shallow footings to reduce vibration. • Consider using highway helpers to maintain traffic flow. • Have an active law enforcement presence in the construction zone. • Consider how to control traffic in the work zone. Find innovative techniques to properly and adequately sign the work zone.
Maintenance		• Consider grass types that have limited growth to reduce maintenance needs.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Questions and comments from other groups	Construction group	• Use project sequencing and accelerated construction techniques. • Due to price, focus accelerated construction on critical areas such as the downtown side roads. • Implement field trials: use local roads early in the project to test materials (as opposed to mainline areas). • Think about traffic control device requirements while under construction. Plan traffic control accordingly with respect to staging. • Limit contract size: small contracts may create problems with managing individual projects. The more contracts on a project, the more 'drop dead' dates should be considered.
	Traffic group	• Consider the ease of removing pavement markings. • Plan for Highway Helpers and law enforcement on site. • Explore a system which will convey driver speed. • Consider variable speed limits within the construction zones. • Utilize the temperature sensors and warning devices that are planned for the project. • Minimize 'ghost markings,' pavement markings with respect to older drivers, etc. • Consider pavement marking durability. Could you imbed plastic markings into the pavement? Note that plastics don't stick to PCC pavements very well. • Consider using epoxy markings: they work well in dry weather but not in wet conditions. Consider alternative pavement marking systems. • Consider ITS to reduce response times and improve incident management.

GEOTECHNICAL/PAVEMENTS/MAINTENANCE SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
	PR group	• Had nothing to report.
	Structures group	• Do not want to see brine used on the bridge decking but conceded that it will likely be used. • Stated that design for the smaller structures and approaches is not economical from an engineering viewpoint. • Want to investigate a heated bridge deck. • Planning on a high-corrosion protection package. • Noted that Iowa does not typically care for shallow foundations. • Agree that pile load testing should be utilized.

Structures

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STRUCTURES SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging	Consider complete closure versus lane closure.	• Staging is expensive.
River bridge	Use barges for construction.	• Estimate: would need two to three days to float into place. Location of offline construction could be an issue.
	Consider foundation options.	• Consider drilled shafts with water level cap. Spread footings require cofferdam and dewatering. Quality of rock may be a concern. No pier protection; piers designed for impact. Precast caps. Specialized formwork. • Consider delta piers for full arch and tied arch. Most complex to build; likely more costly. Should not affect offline construction. Consider precast piers or precast shell. Increase mainspan length.
	Utilize 14-foot bike trail.	• Use for staging and maintenance.
	Consider twin versus single structures.	• Are fewer inspection and maintenance issues with twin bridges.
		• Address redundancy with twin structures: close one, leave one open.
	Fabricate superstructure offline.	• Need location to construct and ship to site or construct on barges. Can construct substructure in parallel. Weight of structure may be an issue; twin structures are lighter. Jacking height is not an issue.
River bridge	Consider structure type.	• Tied arch reduces size of foundation, allowing for quicker construction. • Suspension bridges are slow to construct. • True arch would require temporary tie if brought in by barge. • Note: basket handle cables could have fabrication issues. No transport issues should exist for barging.

STRUCTURES SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Interchange structures	Provide for traffic.	• Maintain two mainline lanes in each direction.
	Decide on materials.	• Concrete versus steel: prestess for simple structures.
	Utilize innovative construction techniques.	• Avoid center piers. Use three-span structures with anchored or counter-weighted end spans. • Precast substructure. • Construct offline, and use horizontal skidding to jack the existing and replace in a weekend. The Illinois DOT has some experience with skidding. • Plug fills instead of bridges. • Use partial deck panels or full-depth precast panels with overlay. Partial depth may get reflective or tension cracking. Some additional cost. Illinois has experience issues with precast decks. • Remember that temporary bridges slow construction. • Note: SIP steel forms are difficult to inspect and have maintenance issues.
Materials	Utilize high-performance materials.	• Consider HPC decks, low permeability. • Use weathering steel and epoxy-coated reinforcing steel.
Mainspan approaches	Construct offline.	• Construct offline and bring in by barges, including concrete deck. • Launch spans into place.
	Plan for substructure construction.	• Precast substructure decks. • Extend drilled shafts above ground to pier cap.
	Address right-of-way concerns.	• There is no significant displacement impact for twin or single structures.

STRUCTURES SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Tie-in points	Consider a hyperfix.	• Close the highway to tie-in ML; would be in and out in a few months. Primary traffic is local. Improve detour routes. May affect businesses. • Could use existing bridges for MOT. • Is cheaper but may not be popular with the public. • Need to address public involvement concerns for mainline closure. • Is safer than staged construction.
	Precast substructure.	• Consider advanced construction of foundation. Stagger piers. Consider stone columns and micropiles under existing viaduct. • Precast foundations to reduce closure time.
	Demolish existing structure.	• Remove existing superstructure in large sections and demolish offsite.
Retaining walls	Consider MSE walls.	• Are appropriate for fill locations.
	Utilize modular block systems.	• Use precast gravity walls.
	Consider soldier pile wall.	• Drill through existing footings to construct walls rather than remove them.
	Precast cantilever walls.	• More expensive but can construct with limited ROW. • Are quick to construct.
	Use soil nails.	• Are appropriate for cut locations. • Base selection on cut/fill and height of wall.

Right-of-Way/Utilities Railroad Coordination

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RIGHT-OF-WAY/UTILITIES/RAILROAD COORDINATION SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Early ROW Acquisitions/ROW Needs/Activities		
Hardship purchase of total takes	Look at mainline laydown, staging, "run-arounds" for traffic maintenance.	• Are funds available now to start a limited hardship ROW acquisition program?
Options	Consider borrow-specified versus contractor purchase.	• Coordinate with wetland mitigation.
Decision on structures		• Twin bridges require more ROW, extra footage on each side. Need decision by spring 2006. Coordinate with construction.
Option to use State monies for acquisition	Look at option to use State monies for acquisition and later get a credit.	• Coordinate with financing. If 100 percent State funds are used for early acquisition, could get a credit later against State match/share of project cost.
Procedures for Expediting Utility/Railroad Adjustments		
Inventory of utilities and railroads		• Complete as early as possible. Need railroad cooperation to avoid delays.
SUE	Apply appropriate level SUE per ASCE standard 38-02.	• SUE study is an elective service. Without SUE, utility reimbursements risk higher cost.
Lateral crossings	Coordinate lateral crossings.	• Promote sharing of the same trench/box; would reduce the number of crossings.
Advanced utility reimbursable interest notification		• This will expedite agreement on relocation of facilities. Cross sections would have to be available.

RIGHT-OF-WAY/UTILITIES/RAILROAD COORDINATION SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Joint utility agreement, i.e., (Iowa/Illinois)		• State legal counsels would have to review and concur. Would allow faster review by utilities.
Fiber-optic bridge attachment	Incorporate fiber-optic bridge attachment into bridge design.	• Coordinate with structures skill set.
Existing ROW	Allow utilities to remain in existing ROW.	
Major Project Issues		
4(f) properties		• Look at 4(f) properties (one in Iowa, two in Illinois). Need early determinations of impacts and possible replacement solutions.
Contaminated properties.	Address clean-up issues.	• Start early to resolve problems of remediation and responsibility. These situations always take time to resolve.
Communication centers	Address utility relocation issues with the two communication centers (Qwest/John Deere).	• Underground infrastructure impact must be verified, even though structure is not being acquired. • Not acquiring the building above ground may be misleading in terms of potential significant impacts to the underground infrastructure feeding into and out of the building.
Railroad grade separation agreements	Look at utilities within railroad ROW and related time issues.	• Start early and stay late with the affected railroads, as it will probably take longer than anticipated and may adversely impact project schedule if agreements are not complete.
Borrow areas	Aggressively attempt to use borrow areas to develop wetlands and mitigate project impacts.	• Good material site might not be suitable for wetland development, need to make the best decision for project.
Enhancing Project ROW/Utility/Railroad Coordination		
Multiple agencies/entities	Makes coordination a challenge. Project involves two States, three cities, FHWA, the utility companies, railroads et al.	• .I-74 PMT should always include representation from ROW, utility and railroad disciplines in both Iowa and Illinois. • Staffing availability may be a barrier. High risk if ROW and utility coordination failures delay this $1 billion project. Need the right technical staff at critical points.

RIGHT-OF-WAY/UTILITIES/RAILROAD COORDINATION SKILL SET		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Coordination	Meet with all utilities at plan/phase development with the first meeting after utility inventory is complete (SUE).	• Cooperation of utilities and railroad may be a barrier. Periodic progress meetings are critical to keeping activities on schedule.
Stakeholder involvement	Involve external stakeholders in project issues/decisions involving: LPAs, railroads and private utilities.	• Cooperation of utilities and railroad may be a barrier.

Innovative Financing. The 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.

ROW/Utilities/Railroad Coordination. The ROW group's primary role is to ensure that ROW, utilities and railroad work comply with state laws and procedures. They 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.

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.

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.

Structures (Bridges, Retaining Walls, Culverts, Miscellaneous). 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.

Innovative Contracting. The innovative contracting group explores state-of-the art contracting practices and strives to match them with the specific needs of the project.

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

Long Life Pavements/Maintenance. The 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.

Construction (Techniques, Automation and Constructability). The construction crew explores techniques that will encourage the contractor to deliver a quality product within a specific timeframe while maintaining traffic.

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.

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.

Background of ACTT

ACTT is a process that brings together public- and private-sector experts from across the country in a setting that encourages flexibility and innovation. The goal is to recommend technologies that will accelerate construction time while reducing user delay and community disruption. This necessitates a thorough examination of all facets of a highway corridor with the objective of improving safety and cost effectiveness while minimizing adverse impacts to the traveling public.

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, with several more pending in 2006.

More information on the ACTT program is available online at:

http://www.fhwa.dot.gov/construction/accelerated/index.htm.

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