**INTRODUCTION**

- FHWA is adopting and promoting the implementation of accelerated bridge construction techniques (ABC) through the "Every Day Counts" initiative to expedite project delivery.
- ABC techniques are often associated with high initial costs and unknowns, which deter many agencies from a wider implementation of these techniques.
- The impact of adopting ABC techniques is not fully understood.
- There is a pressing need to provide decision makers with a comprehensive decision making framework that includes both performance and lifecycle components. This framework will be integrated into a comprehensive decision support system (DSS) in a future effort.

**PURPOSE OF THE RESEARCH**

- Develop a tool that can estimate the total costs of ABC projects including construction, indirect, agency, and user cost.
- Analyze different ABC case studies to determine the drivers and barriers for implementing ABC and performing benefit-cost analysis for different ABC methods.
- Establish the foundation for a more comprehensive decision support tool.

**INITIAL STUDIES**

- Literature review has shown that existing tools support the decision-making related to ABC are mainly quantitative tools.
- Utilized simple qualitative tools include workflows, matrices, and questionnaires.
- More advanced qualitative AHP-based tools have been developed to guide the decision makers through performing two-step pair-wise comparisons between construction alternatives for each of the criteria selected by the users based on their goals and priorities.
- AHP-based tools consider myriad factors and reduces the very high subjectivity inherent in the qualitative tools by attempting to assign scores to each construction method based on its performance in each of the criteria considered.

- However, the scores in the AHP-based method are still subjective since they are assigned based on the user's perceptions rather than objective evaluation and in-depth analysis.

**RESEARCH APPROACH AND METHODS**

The project is creating a multi-parameter estimation tool which has the capability of estimating the total costs associated with ABC projects; namely, construction cost, indirect & agency cost, and user cost. This tool will be integrated in a comprehensive DSS in a future effort.

**Estimating User Cost**

- This project will develop an integrated environment of tools that support scenario analysis and the estimation of associated user costs.
- The tools will allow the estimation of mobility, reliability, environmental, safety, and impacts on the businesses and community.
- Real word data from advanced monitoring systems will be used to assess the accuracy of the estimation.

**CASE STUDIES**

Several case studies of ABC projects will be analyzed. Data from five agencies; namely, ODOT, MassDOT, TDOT, TXDOT, and VDOT will be collected following a cost-benefit analysis. Structured interviews will be conducted with different stakeholders involved in the project, such as representatives of the design and construction departments of the DOT, project managers, contractors, and consultants.

**DATA COLLECTION**

- A total of study oil projects (ODOT, MassDOT, etc.) were interviewed, and data was collected from interviewing five different STAs, namely: ODOT, MassDOT, TDOT, TXDOT, and VDOT.
- The data collected will be analyzed to estimate the contribution of each of the aforementioned components to the indirect and agency costs and include them in the total project cost tool.

- The following tools and methods are being integrated and tested: FHWA user cost guidelines, Quickzone, Q-DAT, RealCost, Highway Capacity Manual (HCM) facility procedures, SHRP 2 procedures (C11, L07, and L08 approaches), Highway Safety Manual (HSM) procedures, EPA MOVES, data analytics, and demand modeling tools (to estimate the impacts on freight, businesses, and community).