

**BIDDING OF ACCELERATED BRIDGE CONSTRUCTION PROJECTS:  
CASE STUDIES AND CONSENSUS BUILDING**

**Quarterly Progress Report  
For the period ending May 31, 2018**

Submitted by:  
PI- Katelyn Freeseaman and Jennifer Shane  
Undergraduate Student- Seth Rohs and Monica Diaz

**Affiliation: Department of Civil, Construction and Environmental Engineering  
Iowa State University**



**ACCELERATED BRIDGE CONSTRUCTION  
UNIVERSITY TRANSPORTATION CENTER**

Submitted to:  
ABC-UTC  
Florida International University  
Miami, FL

# **1. Background and Introduction**

Accelerated bridge construction (ABC) is the solution of choice to upgrade substandard bridges, while maintaining traffic flow and optimizing safety through work zones. However, the perception of higher construction costs for ABC versus conventional construction continues in spite of numerous ABC projects having lower construction costs relative to conventional construction. This inaccurate perception and the fear of cost overruns are causing some bridge owners to be hesitant about using ABC technologies, especially those technologies related to bridge system moves which can provide the greatest benefit for safety and traffic flow impacts.

Whether to use ABC for a specific project needs to be decided at the project development stage. Research is needed to assist state DOTs in identifying how best to set up bid items and the bid process within their agencies to be able to effectively document ABC costs for prefabricated bridge element construction and also bridge system moves including lateral slides, longitudinal launches, and self-propelled modular transporter (SPMT) moves. This project will focus upon consensus building of bid items used for ABC projects to allow for cost-based decisions regarding ABC implementation to be made.

## **2. Problem Statement**

While ABC projects are well-known for their abbreviated construction timelines with respect to traffic impediments, these types of projects are also associated with significantly greater construction costs. This perception is not always true, and can be dispelled via thorough documentation of key project development tasks related to contracting and bidding methods to allow for an accurate portrayal of ABC project costs. Moreover, hesitation in implementing ABC practices due to a lack of understanding in determining appropriate bid items can be addressed via consensus building of successful practices.

## **3. Research Approach and Methods**

The proposed research project will consist of a thorough exploration of current bidding methods for ABC projects. This will be accomplished via surveys, case studies, content analysis, interviews, documentation and observations, as outlined in the following sections. It is anticipated that this effort will coincide with a separate proposal from the research team regarding contracting methods for ABC projects. This overlap in research tasks will allow for an avoidance of the duplication of work via combined information collection efforts for both bidding and contracting methods.

## **4. Description of Research Project Tasks**

The following is a description of tasks carried out to date.

### **Task 1 – Literature Review**

To prepare the current proposal, the research team has conducted a preliminary review of relevant studies and projects completed to date. For Task 1 of this project, the research team will compile all related information available in journals, conference proceedings, and technical reports in a concise and comprehensive summary. The main objective of this task is to obtain an exhaustive understanding of current bidding methods used for accelerated construction, with an emphasis on their associated cost effects.

Information collection is underway and a literature review is in progress.

### **Task 2 – Information Collection**

While Task 1 focuses upon extracting relevant material from documented sources, Task 2 will involve survey responses and interviews to collect pertinent information from state and local governments, as well as consultants/contractors when possible and beneficial, with respect to ABC project information. This project information will include bidding and contracting methods, as well as closure time determination processes. The research team understands the importance of both the quantity and quality of data that is obtained, as the project's success depends upon this information. The following states are acknowledged for their past ABC projects by the ABC-UTC and will thus be contacted as part of this task:

- Iowa
- Massachusetts
- Michigan
- Minnesota
- Oregon
- Texas
- Utah
- Vermont
- Washington State
- Wisconsin

Other entities will also be contacted to ensure that an exhaustive data set is acquired. In addition to gathering important project-specific information, the research team will also communicate with agencies who have implemented ABC projects to determine what gaps exist in determining actual ABC construction costs, and to identify if alternative bidding methods could help to remove uncertainties. The results of this information collection will also be incorporated into project-specific case studies. An element of the contracting and bidding process that will also be given attention and proper documentation is associated contract provisions, including incentives/disincentives (I/D), payment for acceleration, and other applicable methods.

In conjunction with the literature review, the ABC-UTC project database is being used to identify ideal candidates for case studies to garner further information. The project team has identified preliminary case study candidates and is currently creating a survey to send to state DOTs for further information collection. Case study data will be obtained via in person interviews whenever logistically possible.

### **Task 3 – Summary of Successful Practices**

The efforts associated with Tasks 1 and 2 will be summarized to highlight those methods deemed most successful in past ABC projects. It is anticipated that this effort will allow for the portrayal of lessons learned, and suggested best practices for the bidding and advertising of future ABC projects. This task will also serve as guidelines for agencies who have not yet implemented ABC projects, encouraging agencies to implement best practices for future applications.

### Task 4– Final Report

The project findings from the previously identified tasks will be prepared by means of a final report. This document will include the identified best practices, case studies, and other key project findings.

## 5. Expected Results and Specific Deliverables

As a result of this research effort, an ABC-UTC guideline for best practices for the bidding of ABC projects will be developed for use by agencies for future ABC projects. These guidelines will be based upon case studies, highlighting past successes on ABC field implementations.

## 6. Schedule

Progress of tasks in this project is shown in the table below.

	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Task 1	■	■	■															
Task 2	■	■	■	■	■	■												
Task 3							■	■	■	■	■	■						
Task 4													■	■	■	■	■	■