SYNTHESIS OF AVAILABLE CONTRACTING METHODS

Quarterly Progress Report
For the period ending February 28, 2020

Submitted by:
PI- Jennifer Shane
Co-PI Katelyn Freeseman
Undergraduate Student- Michael Volk

Affiliation: Institute for Transportation
Iowa State University
Ames, IA

ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

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

1. Background and Introduction

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 project delivery methods to allow for an accurate portrayal of ABC project costs.

One such hurdle in accurately estimating ABC project costs is the range of delivery methods utilized by agencies. While Design-Bid-Build (DBB) has conventionally been used for construction project, Design-Build (DB) and Construction Manager General Contractor (CMGC) project delivery methods have risen in popularity. These alternative methods have shown to provide many benefits, though little research focus (for example, on the effective practices of successful CMGC projects) has been given due to limited experience and information available.

2. Problem Statement

Contracting provisions for payment have not been explored in great depth in the highway industry, possibly because the traditional mode of contracting is with unit price contracts. In preparing a bid for these projects, the contractor, will develop unit costs for each item in the design, and based on the quantity take-offs from the completed designs, bid the project. Some items may be lump sum, i.e., mobilization, but most of the items on the project are unit price. During construction, the contractor is paid the unit price for each unit on the project. This can be troublesome if the quantity take-offs in the bid were inaccurate, as units may actually cost more or less depending on a number of factors, including quantities. Other contracting provisions can be used on projects, including lump sum, guaranteed maximum price, cost plus, and other variations. These are not used frequently with DBB projects, however, with an increasing number of alternative delivery methods being used, there are more alternatives in contracting payment provisions since there are often not complete plan sets as the time of proposals with alternative delivery methods.

3. Objectives and Research Approach

The proposed research will consist of a thorough exploration of current delivery methods and contracting provisions for ABC projects. This will be accomplished through surveys, interviews, content analysis, documentation and observations, as outlined in the following sections.

4. Description of Research Project Tasks

The objectives of this project will be achieved via 5 tasks:

1. Literature Review
2. Information Collection
3. Exploration of Contracting Methods
4. Summary of Successful Practices

5. Final Report

To date the research team has worked on the literature review for task 1.

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 delivery and contracting methods used for accelerated construction.

Task 2 – Information Collection

While Task 1 focused upon extracting relevant material from documented sources, Task 2 will focus upon 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 contracting information. This project information will also document delivery and procurement methods. The research team understands the importance of both the quantity and quality of data that is obtained, as the project 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. The results of this information collection will also be incorporated into project-specific case studies.

Task 3 – Exploration of Contracting Methods

This task will use information collected from Tasks 1 and 2 for the comparison of contracting methods, including unit price, lump sum, and guaranteed maximum price, for different items for ABC projects. The evaluation of these methods will include common project size (cost), project types (scope), project delivery method, characteristics in schedule, constraints and any special requirements. To encourage the use of ABC, emphasis will also be given on any correlation between closure periods and bid prices associated with the identified contracting methods.

Task 4 – Summary of Successful Practices

The efforts associated with Tasks 1 through 3 will be summarized to highlight those methods deemed most successful in past 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 5 – 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 contracting method best practices 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

During this period the research team finalized the research report. The report was reviewed by the publactions group at the Insitute for Transportaation. Additionally, the technical review panel reivewed the report and provided comments. The comments were addressed prior to submitting the report to FIU.