



# Flexible Start/Fixed Duration Contracting: A Case Study

tech transfer summary

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## RESEARCH PROJECT TITLE

Flexible Start/Fixed Duration Contracting for Construction of Transportation Projects: A Case Study of the Paseo Bridge Maintenance Project

## SPONSORS

Smart Work Zone Deployment Initiative; Federal Highway Administration; and Midwest Transportation Consortium, a U.S. Department of Transportation University Transportation Center

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The Midwest Transportation Consortium (MTC) is part of the Center for Transportation Research and Education (CTRE) at Iowa State University. The MTC is the University Transportation Centers Program regional center for Iowa, Kansas, Missouri, and Nebraska.

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Flexible start/fixed duration contracting was analyzed through a case study of the Paseo Bridge maintenance project in Kansas City.

## Objective

The objective of this project is to conduct an investigation of flexible start/fixed duration contracting. Researchers analyzed the current practices of a number of state DOTs and conducted a case study of the Paseo Bridge rehabilitation project in Kansas City, Missouri.

## Problem Statement

In recent years, construction procurement has witnessed a rapid increase in volume due to the need to maintain a rapidly decaying transportation infrastructure. This increase in procurement volume is paralleled with changes in contracting methods for transportation projects that can be attributed to (1) the need to improve project performance in cost, time, and quality and (2) the downsizing and restructuring of state highway agencies. These changes led to the development of innovative contracting methods that are being used to accelerate the delivery of highway construction and reconstruction projects.

One of these innovative contracting methods, called A+B contracting, places emphasis on project duration by giving project time a monetary value. A+B contracting can also include incentive/disincentive clauses that provide contractors with a monetary bonus for completing work ahead of schedule and enforcing a reduction in pay for late completion.

Although the importance of allowing contractors flexibility in scheduling their projects has been established, there has been little academic research regarding the risks, benefits, and drawbacks of flexible start/fixed duration contracting.

## Research Description

The research team conducted a search of legal cases involving construction start dates to identify the risks associated with firm schedule start dates, as well as the role project commencement plays in construction disputes. The researchers also conducted an exploratory investigation of current practices in flexible start contracting, targeting state departments of transportation in Washington (WsDOT), Minnesota (MnDOT), and Missouri (MoDOT). Several methods were used to collect information from these three states, including an archival data search, personal telephone interviews, and email questionnaires.

Additionally, researchers conducted a case study of a project where this contracting method was applied. The project utilized for the case study involved the rehabilitation of the Paseo Bridge in Kansas City, Missouri. The MoDOT resident engineer responsible for this project was interviewed to gather more in-depth information regarding the benefits and drawbacks of flexible start/fixed duration contracting.

## Paseo Bridge Maintenance Project

The Paseo Bridge is a major river crossing over the Missouri River that carries I-29 and I-35 traffic north of Kansas City and serves as the primary connector from Kansas City's central business district to the north metro and northern suburbs. At approximately 100,000 vehicles per day, it is the busiest river crossing in the Kansas City metropolitan area.

The renovation project involved painting; replacement of barrier rails, lighting fixtures, and bearings; installation of weatherproofing for the bridge's cables; cleaning of the flexure pin housings; and rehabilitation of the bridge deck. A+B contracting, with incentive/disincentive clauses, was used for this project.

Due to the use of A+B flexible start/fixed duration contracting, the bridge rehabilitation was completed two months ahead of schedule, allowing the contractor to earn the maximum bonus amount. The major work zone disruption time was six months, and the resident engineer believes the disruption could have been in place for as long as two years using traditional contracting.

## Findings and Future Work

The use of flexible start/fixed duration contracting appears to provide for better risk allocation, increased competition among bidders, lower bid costs, and shorter duration of work zone traffic disruption. Reduction in the amount of time a work zone is in place results in shortened periods of disruption to the traveling public and reduced exposure for workers in the construction

zone. Flexible start/fixed duration contracting can also provide benefits in situations where labor and material supplies are constrained because it allows contractors to begin work at the most effective time in relation to other work underway in the region.

Flexible start/fixed duration contracting could be considered for almost any job, but is ideally suited for projects in which roads or road sections will be closed, causing major disruptions in traffic patterns. Projects with substantial preparatory work and post-closure work are also good candidates. Projects for which flexible starts would cause major inconvenience to local businesses or the traveling public should not be considered. For instance, banks, emergency service providers, or hospitals may need more than 30 days notice if traffic is to be rerouted in the area in which they are located. If a major trip-generating event is to occur during the potential construction period, this should be taken into consideration when planning projects.

Flexible start/fixed duration projects should include a start window and a latest allowable completion date, along with a minimum period in which the contractor must notify the agency prior to the start of work. It should be noted that the use of flexible start/fixed duration contracting may also strain local agency resources, particularly onsite inspectors. Safety does not appear to be compromised through the use of flexible start/fixed duration contracting, but onsite agency personnel should focus their attention on critical path activities, especially if there is an early completion bonus in the contract.



*Aerial photo of the Paseo Bridge in Kansas City, Missouri*