

**Final Report  
Special Experimental Project No. 14 (SEP-14)  
Michigan Department of Transportation  
Alternate Technical Concepts for Staging and Maintaining Traffic  
September 24, 2014**

**Introduction**

The Michigan Department of Transportation (MDOT) received approval to use Alternate Technical Concepts (ATCs) on two design bid build projects through the FHWA's SEP-14 program. On these projects, ATCs were limited to maintaining traffic and staging. This final report includes the results, observations and lessons learned from both projects.

**Project Descriptions**

**Project #1**

MDOT Job Number: 106848A (107607A, 108695A, 110434A, 115141A, 115135A)

Control Section: 37032 & 56045

Length of Project: 7.4 Miles

Location: US-10, from the Midland/Isabella County Line to M-18

Engineer's Estimate: \$21,663,506.76

Bid Price: \$21,131,669.59

Scope of Project: US-10 is a freeway with an ADT of 8,700 (with 9% commercial). The project used an alternate pavement bidding (APB) process to determine if the fix was an unbonded concrete overlay or a Hot Mix Asphalt (HMA) overlay over rubblized pavement. The maintaining traffic requirements were the same for both pavement options, and the project was scheduled to be under construction in 2013 and 2014.

**Project #2**

MDOT Job Number: 110397A

Control Section: 09035

Length of Project: 3.3 Miles

Location: I-75, from Pinconning Road to the Bay/Arenac County Line

Engineer's Estimate: \$11,719,541.70

Bid Price: 12,746,432.02

Project Scope: I-75 is a freeway with an ADT of 21,400 (with 7% commercial). The project used an alternate pavement bidding (APB) process to determine if it will be built with an unbonded concrete overlay or a Hot Mix Asphalt (HMA) overlay over rubblized pavement. The maintaining traffic requirements were the same for both pavement options, and the project was scheduled to be under construction in 2014.

**Alternate technical Concept Process**

An ATC process for maintaining traffic was proposed in order to allow all potential construction methods to be considered pre-bid in order to maximize competition, incorporate innovative approaches and equipment that could add value to the project while maintaining a safe construction work zone. To accomplish these goals, the following steps were taken on both projects:

- 1. Preliminary information Supplied to the Contractor**  
MDOT provided the design and construction industry preliminary concepts, goals, plans and specifications at least a month prior to the project's formal advertisements.
- 2. Information Supplied to the Contractor During Advertisement**  
Detailed maintaining traffic plans and specifications were developed for maintaining traffic on the US-10 project, while only written requirements and restrictions were provided on the I-75 project.
- 3. Pre-Bid Meetings**  
A mandatory pre-bid meeting was held on both projects. The pre-bid meeting was primarily focused on the ATC process.
- 4. ATC Submittal and Review Process**  
A Notice to Bidders was developed for the contract to describe the ATC process. This document described the project's goals, requirements, restrictions, and ATC process steps. The ATC process steps are:
  - a) Development and Submittal of a Conceptual ATC (CATC) by the contractor team
  - b) MDOT review and response to the CATC
  - c) Development and submittal of an ATC
  - d) MDOT review and response to the ATC
  - e) Submission of bids using the MDOT provided design (US-10 Project) or the approved ATC (US-10 and I-75 Projects).

## **Summary of Results**

### **Project #1: US-10**

- 6 CATC's were proposed by 5 Contractors
- 6 ATC's were approved
- 4 Contractors bid on the project, which is in the range of the normal amount of bidders expect on a project of this size, location and scope.
- All teams bid on their ATC instead of the MDOT-furnished design
- Winning Bid was 2.47% under the Engineers Estimate
- Construction work on US-10 was reduced from 2 seasons to 1 season.

The results of the ATC process on the US-10 project were very successful due to the significant reduction of delay to US-10 traffic. The bid price was very close to the Engineer's estimate indicating that MDOT received good value by using ATC's. The increase time required by MDOT staff to review ATCs was minimal compared to the time savings for the traveling public.

### **Project #2: I-75**

- 7 CATC's were proposed by 4 Contractors
- 6 ATC's were approved
- 3 Contractors bid on the project, each including an ATC in their bid, which is in the range of the normal amount of bidders expect on a project of this size, location and scope

- Winning bid was 8.76% over engineer's estimate

The results of the ATC process on the I-75 project were successful even though the end results were not as significant as on the US-10 project. The bid price was within an acceptable percentage of the Engineer's Estimate, the maintaining traffic/staging plan was acceptable. MDOT piloted a new/different contracting method that provided only restriction and requirements, but not detailed plans. MDOT recommends that future projects fully develop plans and contract provisions that could be modified by an ATC; however, piloting this process was still insightful because MDOT was able to gain firsthand knowledge of the pro's and con's of this method, and its impact to MDOT's reviewers and how MDOT's industry reacts to new challenges.

### **Industry Reaction**

MDOT contacted each contractor that pursued both projects and asked for their thoughts and suggestions on the ATC process. Below is a summary of the responses.

- Industry is supportive of using Alternative Technical Concepts for maintaining traffic.
- Industry recommends that MDOT always provide a base set of maintaining traffic plans.
- Industry would like to see a longer advertising period than a traditional project, and indicated 8-9 weeks is preferred.
- Industry prefers optional CATC and ATC review meetings instead of mandatory review meetings.
- Industry indicated the ATC process is clear and a mandatory pre-bid meeting is not necessary
- Industry does not want to see any statements such as "as directed by engineer" in the contract because every engineer is different and this adds an element of risk to the project. Contractors may take different risks and this is perceived as unfair bidding.
- Industry would like to have MDOT pay for traffic items that are damaged by traffic or by anything outside of their control. Contractors cannot anticipate the amount of damage that will occur on a project.

### **Recommendations and Lessons Learned**

Based on the initial limited scope ATC projects, MDOT offers the following items that may add value to future ATC procurements.

- Provide a base set of Maintaining Traffic plans and specifications. This allows teams to bid on a project if their ATC is not approved, and it helps MDOT to identify requirements and restrictions for the project.
- The restrictions and requirements for ATCs should not be more restrictive than the base design.
- Provide an advertising period of 8 to 9 weeks when possible. Avoid holidays or special events that limit the availability of the contractor's or owner's team.
- Consider making the CATC and/or ATC meetings optional, but will reserve the right to require a meeting if either side believes it to be necessary for a thorough review of the information provided.
- Be very conscious of using undefinable statements such as "as directed by the engineer", and eliminating such language when possible.

- MDOT will pay for maintaining traffic items that are damaged by traffic at pre-established unit prices.
- Requirements and restrictions from any permits and the NEPA process must be incorporated into the requirements and restrictions in the ATC process.
- The owner’s review team should have a limited number of members that have the technical ability and authority to make timely decisions. The ATC process can be time intensive for the team in order to review and respond to the submittals. Once the project has been selected as an ATC project the team should reserve time for the various meetings and review activities.
- It is critical to keep the confidentiality of the ATC process
- Involving industry while developing the ATC process adds value and helps to gain buy-in to the new contracting method.
- Provide draft plans and specifications far enough in advance of the formal advertisement period to allow contractors to partner with designers so they can begin developing CATCs.
- It is beneficial to include an FHWA representative on the CATC/ATC review panel.
- The ATC methodology can provide value since all teams can propose items that are in line with their company’s expertise, equipment, and current work load.
- When reviewing CATCs and ATCs, make sure the limits and scope of the ATC are clearly defined to ensure there is no confusion during construction on what is included or excluded from the ATC.

### **Project Information**

All contract documents can be found on MDOT’s e-Proposal website (<http://mdotcf.state.mi.us/public/eprop/login/index.cfm>). Once registered, enter the e-Proposal website by typing in the user’s email address and password. Instructions for “new user registration” is on the left side of this page. Select the applicable letting date from the “Lettings” area on the left side of the page, then select the project’s item number (see below for each project’s letting date and item number) from the drop down menu in the middle of the page. The project’s plans and proposal, as well as any addenda are available for downloading from this location.

US-10: 05/22/2013 Letting, Item #901

I-75: 01/10/2014 Letting, Item #001