

Annual Report for FHWA – Michigan Division

Michigan Department of Transportation Programmatic use of Type 3 Fixed Price Variable Scope Contracting on Capital Preventative Maintenance Projects January 25, 2015

Introduction

The Michigan Department of Transportation (MDOT) received programmatic approval from the FHWA-Michigan Division to utilize Fixed Price Variable Scope (FPVS) contracting on Capital Preventative Maintenance (CPM) Projects. The purpose of FPVS contracting is to construct the greatest amount of work with the available project budget and gain more value for the dollar by using this innovative contracting method.

This annual report covers federally funded Type 3 FPVS CPM projects let in calendar year 2014.

Type 3 FPVS Contracting Overview

MDOT has developed a type of FPVS procurement requiring approval from the FHWA-Michigan Division through a Work Plan. The approved Work Plan only applies to CPM projects using Type 3 procurements. Non-CPM projects using Type 3 procurements require a separate approval unless otherwise directed by the FHWA.

Type 3: Type 3 FPVS projects receive bids through traditional bidding processes where MDOT advertises the project through traditional methods and the contractor provides unit prices for the pay items provided in the schedule of items. The selected contractor would be the one that submits the low bid based on the pay items and quantities in the Schedule of items. The project is awarded to the low bidder at the low bid price.

The schedule of items is made up of the normal pay items and quantities estimated by the Engineer that are required to complete “Priority 1”. On federally funded projects the Priority 1 work should not be reduced so it is typically setup to be approximately 90% of the budgeted amount. MDOT may provide the Contractors with the available budget for the project. The portion of the project that is not included in the Schedule of Items is considered “Priority 2” (additional priority areas may also be identified in the plans). Priorities beyond Priority 1 are included in the design and the environmental clearance document, and the contract contains informational pay items and quantities for these priorities. The work in Priority 1 will be completed by the project. If bids are favorable, or if additional funding becomes available to the project during construction, the project work is extended into Priority 2 until the final construction costs are approximately equal to the available funding.

In 2014, MDOT used Type 3 FPVS procurements on two federally funded projects. One project on M-106 was a CPM project that consisted of coldmilling the existing HMA surface and placing an HMA overlay. The second project was a 3R project on US-127 that crushed and shaped the existing pavement and overlaid it with an HMA surface. While this project was not a CPM project, on June 11, 2013, the FHWA authorized the

use of FPVS under the original SEP-14 Work Plan for FPVS projects. The US-127 project was let in February, 2014 and is being included in this annual report.

MDOT also used the Type 3 FPVS procurements on three state funded projects. These projects can also be found in Appendix A for informational purposes.

Project Development Considerations

The M-106 FPVS project was classified as a categorical exclusion and was approved in the State Transportation Improvement Plans (STIP) as part of the General Program Account (GPA) for capital preventative maintenance projects. The portions of the project that were not constructed will be included in a future project.

The US-127 FPVS project was also classified as a categorical exclusion and was included as an individual project listed in the STIP. The portions of the project that were not constructed in 2014 will be completed in a traditional Design-Bid-Build project currently included in the STIP for a future year.

Each project needs to be cleared through the environmental process and all permits obtained for the entire project and not just what is estimated to be constructed. Work cannot exceed what is environmentally cleared.

Bid Process and Results

Appendix A contains the bidding results for each project, and includes the scope of work, dollar value, number of bidders, the bids from all bidders, and the engineer's estimate. The bids on the M-106 project came in 15.1% under the engineers estimate allowing MDOT to improve more work than what would have occurred in 2014. The bids on the US-127 project came in 0.3% under the engineers estimate. Since the bid was so close to the available budget, additional work was not performed.

The engineer's estimate of work on FPVS projects is based on historical average unit prices from a geographic area. The 2014 letting results from the Type 3 CPM FPVS project indicate that the FPVS contracting method is cost effective, and that more work was performed to preserve MDOT's roads than would have been completed through conventional Design-Bid-Build contracts. However, this analysis is based on only two projects. Therefore, the results, while positive, may not be indicative of results if multiple projects had used this contracting method.

Industry Coordination

When MDOT began using FPVS in 2012, MDOT met with representatives from Industry to discuss the innovative contracting methods being used on a project, and required mandatory pre-bid meetings. The US-127 had a pre-bid meeting since it was the first crush and shape FPVS project. The M-106 project did not have a pre-bid meeting since other Type 3 FPVS HMA paving projects have been let within the University Region.

Administrative Consideration

One of the goals of using FPVS is to reduce the amount of work required by staff to manage MDOT's program. A project with a constrained budget reduces the burden on staff to reallocate funds from projects if the cost estimate is exceeded or reduced. By using a fixed amount of funds, MDOT did not have to search for additional projects to allocate any bid savings to, or conversely find additional funds from un-let projects. There are also additional savings in design costs, since there isn't a need to produce more packages due to the bid savings. The FPVS process saves the Department staff time and effort.

Additional Comments and Recommendations

Based on MDOT's experience in 2014, MDOT has the following recommendations:

1. The maximum limits of the work should exceed the estimated amount of work. Bidding history should be reviewed for the type of work being contracted to estimate the normal variations in bids on Design-Bid-Build projects. This is done to estimate the amount of work that should be included beyond the estimated amount of work.
2. Coordination with all stakeholders, including internal staff, industry, and the FHWA is important and should be done early in the programs development. MDOT personnel that are critical to coordinate with are from the environmental, planning, contracting, design, construction and technical subject matter experts.
3. MDOT awarded 3 additional Type 3 FPVS projects in 2014 using 100% State funds. The difference between these projects and the current practice on FHWA projects is that the state funded projects have provisions that allow MDOT to reduce the priority 1 limits. Data on these projects are included in Exhibit A.

Contract Information

Specific FPVS contracts can be found by looking up each project 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 registering new users are on the left side of this page. Select the letting date from the "Lettings" area on the left side of the page, and then select the item number from the pull down menu. The project proposal and any addenda will be available for downloading from this location.

MDOT has also developed a guide of the development of FPVS projects. This guide is expected to be incorporated as an appendix to MDOT's Innovative Construction Contracting Guide in early 2015. This guide will be publicly posted on MDOT's website.

Items unique to Type 3 FPVS contracts are listed below

- Notice to Bidder for Fixed Price-Variable Scope Contracting: This Notice to Bidders indicates how the contract will be managed to a pre-established budget.
- Special Provision for Significant Changes in the Character of Work on Fixed Price-Variable Scope Projects: This special provision modifies the Standard Specifications so increases or decreases in quantities do not constitute a change to the contract.
- Special Provision for Extension of Time on Calendar Date Fixed Price-Variable Scope Projects: This special provision would extend the completion date of the project if

extended beyond Priority 1. This special provision is an optional document on Type 3 FPVS projects.

Appendix A: Bid Letting Results

Federally Funded Type 3 FPVS Projects												
Type	Job No.	Region	Project Scope	Project Limits	Comments	Letting Data	No. of Bidders	Low Bid	Eng. Cost Estimate	Gain/Loss (Percent)	Other Bids	Other Bids
3	106863	North	Crush and Shape, HMA Overlay	US-127, Muskegon River north 3.75 Miles. Project will be extended south if additional funds are available.	Note: FWHA approved the project under the CPM SEP-14 even though it is a 3R project (see email dated 6/11/13)	Item 601, 2/12/14 Letting	3	\$6,726,465.00	\$6,746,899.36	-0.30%	\$6,967,084.31	\$7,742,376.51
3	120141	University	Cold Milling & HMA Overlay	M-106, Green Rd. to Territorial Rd, Ingham and Jackson Counties.		Item 045, 1/10/14 Letting	2	\$729,364.69	\$859,056.36	-15.10%	\$753,559.79	
						Total	5	\$7,455,829.69	\$7,605,955.72	-15.40%		
						Average	2.5	\$3,727,914.85	\$3,802,977.86	-7.70%		
State Funded Type 3 FPVS Projects												
Type	Job No.	Region	Project Scope	Project Limits	Comments	Letting Data	No. of Bidders	Low Bid	Eng. Cost Estimate	Gain/Loss (Percent)	Other Bids	Other Bids
3	123048	Bay	HMA Mill and Fill, ADA Upgrades	M-13, from I-69 to M-21	RRRF - State Funded	Item 604 6/11/14 Letting	3	\$651,440.30	\$603,276.76	-7.98%	\$694,398.42	\$753,402.20
3	113543	Bay	Bridge Epoxy Overlay, bridge approaches	I-69 over Newark Rd and Winslow Rd	RRRF - State Funded	Item 603 6/11/14 Letting	3	\$907,870.99	\$936,924.29	3.10%	1116910.64	1433361.28
3	122624	Grand	HMA Cold Mill and Resurface	Cascade Rd to M-11	RRRF - State Funded	Item 602 5/7/14 Letting	2	\$905,024.81	\$961,925.27	5.92%	922797.39	
						Total	8	\$2,464,336.10	\$2,502,126.32	1.03%		
						Average	2.66667	\$821,445.37	\$834,042.11	0.34%		