

**SEP-14 Work Plan  
Missouri Department of Transportation  
Fixed Price Variable Scope Contracting  
Job No. J7P3108B**

**February 7, 2019**

**Introduction**

The Missouri Department of Transportation (MoDOT) proposes to use Fixed Price Variable Scope Contracting (FPVS) on a project for the installation of Wrong Way Countermeasures and Chevron Signs along various routes in Southwest Missouri.

**Purpose and Scope**

The purpose of the contract is to install the wrong way countermeasures and chevron signs on the maximum number of locations as our budget will allow. The contract will include installation of additional Wrong Way signs, Do Not Enter Signs and Chevron Signs to increase safety. MoDOT has budgeted \$806,000 of our safety funds for the construction of these signs.

**Procurement Process**

MoDOT proposes to use FPVS procurement to accomplish these projects. This contract method will allow MoDOT to vary the amount of work to be completed to match the budget set for the projects. The work included in the bid proposal is established in priority order to be completed and will exceed the amount of work that is expected to be completed by the budget in order to capitalize on getting better than expected bids. This procurement method will have the contractor bid a unit price for the estimated quantities for each item of work in the contract. The estimated quantities included in the contract represent the amount of work than can be completed for the budgeted amount. Once the project has been awarded, the MoDOT construction office would then manage the contract by adjusting the contract quantities to hit the budgeted amount.

*Procurement Overview:*

- (a) MoDOT develops estimated quantities for the pay items in the project that will deliver the budget amount that is included in the project specifications.
- (b) Locations of the work are established in priority order in the project specifications.
- (c) MoDOT advertises the project through our traditional bidding processes.
- (d) The contractor will bid unit prices for the pay items and submits their bids through our traditional bidding processes.

- (e) MoDOT awards the contract to the lowest responsive bidder.
- (f) MoDOT manages the contract quantities based on the unit bid prices, work completed and the project budget following the priorities set in the specifications.

MoDOT will utilize pre-bid meetings or industry meetings with contractors to familiarize them with the FPVS process.

## **Schedule**

This project is scheduled for a Spring 2019 bid opening date with construction to be completed by the Fall 2019.

## **Evaluation and Reporting**

MoDOT will provide FHWA's Missouri Division Office an evaluation of the contract within 6 months of the project's completion. This evaluation will include any relevant information related to efficiencies realized by the FPVS process including, but not limited to, quicker project delivery, cost savings compared to expected costs using the traditional bidding method, and recommendations for improving the use of FPVS. MoDOT has similar projects that will be bid using our traditional bid approach at the same time and those projects will be used for comparison.

# FPVS - Job No. J7P3108B Attachments

## Example Pay items

Pay Item	Quantity	Unit	Bid Price	Total
Concrete Footing, embedded	157.9	CY		
Pipe Posts	30,230	lbs		
2 IN PSST Posts – 12 GA	16,068	LF		
Post Anchor 2.5 IN PSST Posts	4017	LF		
2.5 IN PSST Posts – 12 GA	784	LF		
Post Anchor 2.5 IN PSST Posts	147	LF		
SH-Flat Sheet Signs	8646	SF		
Removal of Existing Signs, Post and Footings	131	Each		
Removal of Existing Signs from Existing Post	176	Each		
Truck or Trailer Mounted Attenuator (TMA)	2	Each		
Construction Signs	744	SF		
Channelizers	100	Each		
Temporary Short-Term Rumble Strips	4	Each		
Changeable Message Signs	2	Each		

Note: The amount of work established for bidding is based on spending the estimated budget amount.

## Contract Award and Management

The bidding documents will include set quantities for each pay item that all contractor will be required to bid by entering a unit bid price. The award of the contract will be given to the lowest responsible bidder based on the set quantities and unit bid price. After the project is awarded to the lowest responsible bidder, the contract will be managed by changing the quantities of each pay item to deliver the project budget.

There are two scenarios that could occur. The first scenario is the awarded bidder's total bid is lower than the project budget. The second scenario is the awarded bidder's bid is higher than the project budget. Here is how the scenarios would be handled after the award of the project:

### **Scenario 1: The awarded Contractor's total bid is less than the project budget.**

Project Budget: \$806,000

Awarded Contractor's Bid: \$781,865

Contractor's Bid:

<b>Pay Item</b>	<b>Quantity</b>	<b>Unit</b>	<b>Bid Price</b>	<b>Total</b>
Concrete Footing, embedded	157.9	CY	700	110530
Pipe Posts	30,230	lbs	2.5	75575
2 IN PSST Posts – 12 GA	16,068	LF	12	192816
Post Anchor 2.5 IN PSST Posts	4017	LF	37	148629
2.5 IN PSST Posts – 12 GA	784	LF	14	10976
Post Anchor 2.5 IN PSST Posts	147	LF	45	6615
SH-Flat Sheet Signs	8646	SF	18	155628
Removal of Existing Signs, Post and Footings	131	Each	200	26200
Removal of Existing Signs from Existing Post	176	Each	200	35200
Truck or Trailer Mounted Attenuator (TMA)	2	Each	1200	2400
Construction Signs	744	SF	9	6696
Channelizers	100	Each	14	1400
Temporary Short-Term Rumble Strips	4	Each	1300	5200
Changeable Message Signs	2	Each	2000	4000

Since the contractor's total bid is less than the budget identified in the project special provisions, MoDOT would look at the priority list of routes identified in the special provisions to add additional quantities of work from the next highest priority. The remaining budget of \$24,135 would allow MoDOT to add work on two additional interchanges using MoDOT's standard change order process. The quantity increase at the contractor's bid price would be:

<b>Pay Item</b>	<b>Quantity</b>	<b>Unit</b>	<b>Bid Price</b>	<b>Total</b>
Concrete Footing, embedded	16	CY	700	11200
Pipe Posts	0	lbs	2.5	0
2 IN PSST Posts – 12 GA	0	LF	12	0
Post Anchor 2.5 IN PSST Posts	0	LF	37	0
2.5 IN PSST Posts – 12 GA	192	LF	14	2688
Post Anchor 2.5 IN PSST Posts	16	LF	45	720
SH-Flat Sheet Signs	144	SF	18	2592
Removal of Existing Signs, Post and Footings	6	Each	200	1200
Removal of Existing Signs from Existing Post	2	Each	200	400
Truck or Trailer Mounted Attenuator (TMA)	2	Each	1200	2400
Construction Signs	64	SF	9	576
Channelizers	40	Each	14	560
Temporary Short-Term Rumble Strips	0	Each	1300	0
Changeable Message Signs	0	Each	2000	0

With the additional work, the final contract price would be \$804,201 which is below the project budget amount of \$806,000.

**Scenario 2: The awarded Contractor’s total bid is more than the project budget.**

Project Budget: \$806,000

Awarded Contractor’s Bid: \$816,561

Contractor’s Bid:

Pay Item	Quantity	Unit	Bid Price	Total
Concrete Footing, embedded	157.9	CY	750	118425
Pipe Posts	30,230	lbs	2.5	75575
2 IN PSST Posts – 12 GA	16,068	LF	12	192816
Post Anchor 2.5 IN PSST Posts	4017	LF	37	148629
2.5 IN PSST Posts – 12 GA	784	LF	15	11760
Post Anchor 2.5 IN PSST Posts	147	LF	48	7056
SH-Flat Sheet Signs	8646	SF	20	172920
Removal of Existing Signs, Post and Footings	131	Each	220	28820
Removal of Existing Signs from Existing Post	176	Each	220	38720
Truck or Trailer Mounted Attenuator (TMA)	2	Each	1500	3000
Construction Signs	744	SF	10	7440
Channelizers	100	Each	14	1400
Temporary Short-Term Rumble Strips	4	Each	1500	6000
Changeable Message Signs	2	Each	2000	4000

Since the contractor’s total bid is more than the budget identified in the project special provisions, MoDOT would look at the priority list of routes identified in the special provisions to remove quantities of work from the lowest priority included in the bid quantities. The project is over budget by \$10,561 and therefore MoDOT would need to remove the work for one interchanges using MoDOT’s standard change order process. The quantity decrease at the contractor’s bid price would be:

Pay Item	Quantity	Unit	Bid Price	Total
Concrete Footing, embedded	-8	CY	750	-6000
Pipe Posts	0	lbs	2.5	0
2 IN PSST Posts – 12 GA	0	LF	12	0
Post Anchor 2.5 IN PSST Posts	0	LF	37	0
2.5 IN PSST Posts – 12 GA	-96	LF	15	-1440
Post Anchor 2.5 IN PSST Posts	-8	LF	48	-384
SH-Flat Sheet Signs	-72	SF	20	-1440
Removal of Existing Signs, Post and Footings	-3	Each	220	-660
Removal of Existing Signs from Existing Post	-1	Each	220	-220
Truck or Trailer Mounted Attenuator (TMA)	-1	Each	1500	-1500
Construction Signs	-32	SF	10	-320
Channelizers	-20	Each	14	-280
Temporary Short-Term Rumble Strips	0	Each	1500	0
Changeable Message Signs	0	Each	2000	0

With the contract change to reduce the quantities, the final contract price would be \$804,317 which is below the project budget amount of \$806,000.

## Site Locations

The following locations are included in the initial bid quantities:

- Chevron signing on various routes in Christian, Barry, Newton and Benton Counties as indicated in the plans.
- Wrong Way and Do Not Enter signing on I-49 north of I-44 from Route AA/E in Bates County to Cedar Rd in Jasper County.
- Wrong Way and Do Not Enter signing on Route 249 from Route VV in Jasper County to Route 66 in Jasper County
- Wrong Way and Do Not Enter signing on Loop 49 from Route 96 in Jasper County (Carthage) to Route HH in Jasper County (Carterville)

The following locations are included as the variable scope portion of the contract:

- Wrong Way and Do Not Enter signing on I-49 south of I-44 from Route FF in Newton County to Route H in McDonald County
- Wrong Way and Do Not Enter signing on Route 59 at Route 60 East in Newton County
- Wrong Way and Do Not Enter signing on Route 7 from Route B in Cass County (Creighton) to Route B/K in Henry County (Urich)
- Wrong Way and Do Not Enter signing on Route 13 north of I-44 from Route 52 East in Henry County to Route 83 in Polk County
- Wrong Way and Do Not Enter signing on Route 65 north of I-44 from Route 52 East in Benton County (near Cole Camp) to Route 125/CC in Greene County (Fair Grove)
- Wrong Way and Do Not Enter signing on Route 60 from FR 247 in Greene County to Route PP in Webster County
- Wrong Way and Do Not Enter signing on Route 65 south of I-44 from Route EE in Christian County to Business Route 65 in Taney County
- Wrong Way and Do Not Enter signing on Route 465 from Route 248 in Taney County to Route 76 in Stone County
- Wrong Way and Do Not Enter signing on Route 13 at Business Highway 13 in Stone County (near Kimberling City)

## Example FPVS Special Provisions

### Contract Liquidated Damages

**1.0 Description.** Liquidated Damages for failure or delay in completing the work on time for this contract shall be in accordance with Sec 108.8. The liquidated damages include separate amounts for road user costs and contract administrative costs incurred by the Commission.

**2.0 Period of Performance.** Prosecution of work is expected to begin on, or before, the date specified below in accordance with Sec 108.2. Regardless of when the work is begun on this contract, all work shall be completed on or before the completion date specified below. Completion by this date shall be in accordance with the requirements of Sec 108.7. No extension of the completion time will be granted due to an increase of quantities per the Scope of Work special provision.

Notice to Proceed: July 8, 2019

Completion Date: December 1, 2019

**2.1 Calendar Days.** The count of calendar days will begin on the date the contractor starts any construction operations on the project.

Job Number	Calendar Days	Daily Road User Cost
<b>J7P3108B</b>	<b>N/A</b>	<b>\$5400</b>

**3.0 Liquidated Damages for Contract Administrative Costs.** Should the contractor fail to complete the work on or before the completion date specified in Section 2.0, or within the number of calendar days specified in Section 2.1, whichever occurs first, the contractor will be charged contract administrative liquidated damages in accordance with Sec 108.8 in the amount of **\$500** per calendar day for each calendar day, or partial day thereof, that the work is not fully completed. For projects in combination, these damages will be charged in full for failure to complete one or more projects within the above specified completion date or calendar days.

**4.0 Liquidated Damages for Road User Costs.** Should the contractor fail to complete the work on or before the completion date specified in Section 2.0, or within the number of calendar days specified in Section 2.1, whichever occurs first, the contractor will be charged road user costs in accordance with Sec 108.8 in the amount specified in Section 2.1 for each calendar day, or partial day thereof, that the work is not fully completed. These damages are in addition to the contract administrative damages and any other damages as specified elsewhere in this contract.

## Scope of Work – J7P3108B

**1.0** The scope of work for this project is to provide chevron warning signing on various undivided highways and to provide Do Not Enter and Wrong-Way sign installation on various routes. The work has been prioritized as follows:

The following locations are included in the initial bid quantities:

- Chevron signing on various routes in Christian, Barry, Newton and Benton Counties as indicated in the plans. All chevron signing indicated in the plans is included in the scope of this project without regard to the budget.
- Wrong Way and Do Not Enter signing on I-49 north of I-44 starting at Route AA/E in Bates County and progressing to Cedar Rd in Jasper County.
- Wrong Way and Do Not Enter signing on Route 249 starting at Route VV in Jasper County and progressing to Route 66 in Jasper County.
- Wrong Way and Do Not Enter signing on Loop 49 starting at Route 96 in Jasper County (Carthage) and progressing to Route HH in Jasper County (Carterville).

The following locations are included as the variable scope portion of the contract:

- Wrong Way and Do Not Enter signing on I-49 south of I-44 starting at Route FF in Newton County and progressing to Route H in McDonald County.
- Wrong Way and Do Not Enter signing on Route 59 at Route 60 East in Newton County.
- Wrong Way and Do Not Enter signing on Route 7 starting at Route B in Cass County (Creighton) and progressing to Route B/K in Henry County (Urich).
- Wrong Way and Do Not Enter signing on Route 13 north of I-44 starting at Route 52 East in Henry County and progressing to Route 83 in Polk County.
- Wrong Way and Do Not Enter signing on Route 65 north of I-44 starting at Route 52 East in Benton County (near Cole Camp) and progressing to Route 125/CC in Greene County (Fair Grove).
- Wrong Way and Do Not Enter signing on Route 60 starting at FR 247 in Greene County and progressing to Route PP in Webster County.
- Wrong Way and Do Not Enter signing on Route 65 south of I-44 starting at Route EE in Christian County and progressing to Business Route 65 in Taney County.
- Wrong Way and Do Not Enter signing on Route 465 starting at Route 248 in Taney County and progressing to Route 76 in Stone County.
- Wrong Way and Do Not Enter signing on Route 13 at Business Highway 13 in Stone County (near Kimberling City).



**2.0** The above routes are listed in priority order. The Commission has budgeted \$806,000 for installation of these signs. The contractor shall begin installation on the first route and continue down the list until all funds have been used. If the contractor will not be able to complete the entire route, the contractor shall begin at the starting point listed and progress along the route with sign installation on the interchange ramps, without skipping interchanges until the funds are expended. It is the responsibility of the contractor to not exceed the budget listed above. Any contract costs incurred above this amount will be the responsibility of the contractor, unless approved by change order.

**3.0** The award of the contract will be based on the lowest responsible bidder based upon their total bid for the itemized quantities in the proposal and unit bid price.

**4.0** Contract quantities will be adjusted after the award of the contract as necessary to match the budgeted amount stated in section 2.0. In the event there is an increase in quantities to the contract, an extension of contract time will NOT be granted.

## **Bonds**

**1.0** The amount of the Bid Bond shall be 5% of the anticipated budget for this project.

**2.0** The amount of the Performance Bond shall be 100% of the anticipated budget for this project.

## **Sign Assemblies and Installation**

**1.0 Description.** The work shall include furnishing all the necessary materials and installing the sign assemblies as shown in the plans or as designated by the engineer.

**1.1** Post lengths shall not exceed 15 feet when measured from the ground to the bottom of the sign. For any sign that exceeds the 15 feet, the contractor shall contact the engineer.

**2.0 Material.** Posts, sign sheeting and concrete footings shall be in accordance with Sec 903.

**3.0 Construction.** The contractor shall stake the proposed location of each sign and provide the engineer the opportunity to review the location prior to installation. Installation of the sign assemblies shall be in accordance with Sec 903 and Standard Plan 903.

**3.1** The contractor shall pour the concrete footings on the same day as the hole is excavated.

**3.2** The contractor shall only attach signs to the back of green shoulder mounted signs on the ramp, which are typically destination signs. Signs shall not to be attached to the back of green signs with specific tourist oriented destinations displayed or to the back of blue or brown signs

located on ramps as these are maintained by the departments supplemental guide sign contractor. Signs may also be attached to the upright columns of overhead sign structures, attached using banding materials per MoDOT standards and specifications.

#### **4.0 Method of Measurement.**

**4.1** Each PSST post will be paid as a 12 feet length of post, including the portion required to be inserted into the anchor sleeve. The length of the PSST posts will not be measured. The contractor may use precut posts of any length that satisfies the height requirements indicated in the plans. Any field cuts shall be repaired in accordance with Sec 1081.

**4.2** Each pipe post will be paid for as the theoretical weight for 16 feet of pipe post, including the required stub length. The length of the pipe posts will not be measured. Weights will be computed using the theoretical weight of the various sections. The contractor may use pipe posts of any length that satisfies the height requirements indicated in the plans. Any field cuts shall be repaired in accordance with Sec 1081.

**5.0 Basis of Payment.** The accepted sign installations will be paid for at the contract unit price for the pay items included in the contract.