Form C-104
Rev. 10/07

# VALUE ENGINEERING CHANGE PROPOSAL
# MISSOURI DEPARTMENT OF TRANSPORTATION

**Date** 3/23/12

| | | | |
|---|---|---|---|
| **Contract ID** | 111118-D04 | **Job No.** | J5P0969/J5P2157 |
| **County** | Cole/Osage **Route** 50/63 | **Original Bid Cost** | $3,024,093.28 |
| **Contractor** | APAC-Missouri, Inc. | **By** | Casey Castrop |
| **Designed By** | MoDOT | **Phone** | 573-449-0886 |
| **VECP #** | XXXXXXXXXXXXXXXXXXXX (to be completed by CXO) 12-20 | **VECP** | ☒ or VECP/PDU |

**1. Description of existing requirements and proposed change(s). Advantages/Disadvantages**

**APAC proposes to value engineer the subject projects by replacing the SP095 level course with .75" profile milling thus saving one lift of SS-1(see attached savings sheet for all calculations). Milling in lieu of the SP095 level course and the use of warm mix asphalt will accomplish the mitigation of reflecting cracks and bumps. We will then replace the proposed two 1.5" lifts of SP095 with a 2" lift of SP190 followed by a 1.75" lift of SP125. We will also create a new linear grading item to mill in place (as done on Rt.50) the existing aggregate/asphalt shoulder while creating a clean vertical joint for the placement of the BP-1 shoulder. The use of the 2" SP190 and 1.75" SP125 will produce the same total thickness of roadway as originally planned; the milling will slightly lower the overall profile of the new roadway while creating a less steep slope on approaches and ditches. To improve the projects overall safety and expedite traffic through the work zone APAC proposes the addition of a pilot car to the J5P2157 project. These proposed changes will eliminate the SP095 level course operation as well as the miscellaneous aggregate for shoulders by milling in conjunction with SP190 operation and incorporating the new linear grading item with the BP-1 shoulders, therefore this will combine multiple operations to limit the impact on the traveling public and expedite the project.**

**2. Estimate of reduction in construction costs.** $255,311.04

**3. Prediction of any effects the proposed change(s) will have on other department costs, such as maintenance and operations.**

**4. Anticipated date for submittal of detailed change(s) of items required by Section 104.6 of the Specifications.**

_____
(date)

5. **Deadline for issuing a change order to obtain maximum cost reduction, noting the effect of contract completion time or delivery schedule.**

_____ _____

(date) (effect)

6. **Dates of any previous or concurrent submission of the same proposal.**

_____

(date and/or dates)

**Additional Comments:**

***** Portion Below This Line To Be Filled Out by MoDOT *****

**Comments:** The concept of the original design was to minimize the possibilities of reflective bumps at the joints of the existing concrete pavement which is underneathe the existing asphalt pavement during the proposed asphalt resurfacing. It is anticipated that the contractor's proposal of a 3/4 inch cold mill combined with warm mix asphalt will completely eliminate the possibility of reflective cracks. The VE proposal will also reduce costs by lowering the roadway profile by 3/4 of an inch. I recommend approval of this VE contingent on a VE change order reason indicating a "no reflective bump" requirement.

Amy [signature] 4-11-12

Submitted By Resident Engineer — Date

**Comments:** Agree w/ comments above and that this is a very valid VE proposal. As stated it is recommended that this proposal be implemented under the condition of a "no bump" requirement including that no grinding or milling of bumps be allowed but be removed and replaced in the event they occur. Regarding coldmilling, the contractor will only be allowed to coldmill where the first lift (SP190) of asphalt can be placed in the same day's operation; exceptions would be transition areas. VE would be 50/50 split.

☒ **Approval Recommended**

☐ **Rejection Recommended**

[signature] Digitally signed by Duane Kliethermes DN: cn=Duane Kliethermes, o=MoDOT, ou=, email=Duane.Kliethermes@modot.mo.gov, c=US Date: 2012.04.17 06:42:11 -05'00'

District Engineer — Date 4/13/12

Value Engineering Proposal. dot

**Comments:** This proposal is approved contingent on the depth of the cold milling not exceeding 0.75". It is important to limit the depth to avoid exposing the underlying layer which displays severe stripping.

☒ **Approval**

☐ **Rejection**

Digitally signed by Dennis Brucks
DN: cn=Dennis Brucks, o=Field Office, ou=6N25, email=Dennis.Brucks@modot.mo.gov, c=US
Date: 2012.04.18 15:42:32 -05'00'

State Construction and Materials Engineer | Date

**Distribution:** **Resident Engineer, Project Manager, District Operations Engineer, State Construction and Materials Engineer**
***Value Engineering Administrator - *MoDOT, P.O. Box 270, Jefferson City, MO 65102**

**Rt. 50/63 Cole/Osage**
**J5P0969/J5P2157**
**ID# 111118-D04**

**VE #1 - Rt. 50 Cole - J5P0969**

| **Eliminate - Savings** | **Route 50 Cole** | | |
|---|---|---|---|
| Item 40 | Misc. Type 1 Aggregate Base | 1,271.30 tons @ $13.96/ton | $17,747.35 |
| Item 50 | BP-1 Pavement Entrances | 2.35 tons @ $49.90/ton | $117.27 |
| Item 60 | SP095 70-22 - 3" | 2,842.20 tons @ $69.88/ton | $198,612.94 |
| Item 70 | SP095 Level Course | 661.10 tons @ $70.32/ton | $46,488.55 |
| Item 80 | Tack Oil | 16,666.4 syds (@ 0.05) = 833.0 gals @ $2.01/gal | $1,674.33 |
| Item 240 | Seeding | 2 Acres @ $1,565.50 | $3,131.00 |
| | | **TOTAL SAVINGS** | **$267,771.44** |
| **Additional - Cost** | **Route 50 Cole** | | |
| 5001 | .75" Milling | 16,666.4 syds @ $1.09/syd | $18,166.38 |
| 5002 | SP125C 70-22 - 1.75" | 1,745.5 tons @ $66.65/ton | $116,337.58 |
| 5003 | SP190C 70-22 - 2" | 1,812.7 tons @ $64.84/ton | $117,535.47 |
| 5004 | Linear Grading Class I | 135 Stations @ $83.55/station | $11,279.25 |
| | | **TOTAL ADD COST** | **$263,318.68** |
| | | **Savings** | **$4,452.76** |
| | | **Total Savings MoDOT** | **$2,226.38** |
| | | **Total Savings APAC** | **$2,226.38** |

VE #1 - Rt. 63 Osage - J5P2157

| Eliminate - Savings | Route 63 Osage | | |
|---|---|---|---|
| Item 270 | Misc. Type 1 Aggregate Base | 7,520.60 tons @ $14.43/ton | $108,522.26 |
| Item 280 | BP-1 Pavement Entrances | 198.1 tons @ $54.02/ton | $10,701.36 |
| Item 290 | SP095 70-22 - 3" | 28,730.50 tons @ $67.95/ton | $1,952,237.48 |
| Item 300 | SP095 Level Course | 8,978.80 tons @ $68.92/ton | $618,818.90 |
| Item 310 | Tack Oil | 180,488.2 syds (@ 0.05) = 9,025 gals @ $2.01/gal | $18,140.25 |
| Item 400 | Construction Signs | 6 Flagger Signs & 6 "Be Perpared to Stop" Signs 192 SF @ $4.02 each | $771.84 |
| Item 580 | Seeding | 30.6 Acres @ $1,565.50 | $47,904.30 |
| | | **TOTAL SAVINGS** | **$2,757,096.39** |

| Additional - Cost | Route 63 Osage | | |
|---|---|---|---|
| Item 400 | Construction Signs | 1 "Pilot Car Follow Me" Sign & 6 "Please Wait For Pilot Car" Signs 36 SF @ $4.02 each | $144.72 |
| 5101 | .75" Milling | 180,488.2 syds @ $0.80/syd | $144,390.56 |
| 5102 | SP125C 70-22 - 1.75" | 16,884.2 tons @ $64.71/ton | $1,092,576.58 |
| 5103 | SP190C 70-22 - 2" | 19,200.1 tons @ $62.67/ton | $1,203,270.27 |
| 5104 | Linear Grading Class I | 1,332 Stations @ $34.09/station | $45,407.88 |
| 5105 | Pilot Car Operation | Lump Sum | $20,448.10 |
| | | **TOTAL ADD COST** | **$2,506,238.11** |
| | | **Savings** | **$250,858.28** |
| | | **Total Savings MoDOT** | **$125,429.14** |
| | | **Total Savings APAC** | **$125,429.14** |

| | |
|---|---|
| Route 50/63 Total Savings | $255,311.04 |
| Total Savings MoDOT | $127,655.52 |
| Total Savings APAC | $127,655.52 |