

Handwritten initials "KI" in a circle.

CONSTRUCTION VALUE ENGINEERING CONCEPT PROPOSAL
MISSOURI DEPARTMENT OF TRANSPORTATION

Date 04/14/2008

Contract ID 080328-501
County Camden Route 5
Contractor Dave Kolb Grading
Designed By Jeff Kolb

Job No. J5P0592A
Original Bid Cost \$11,378,348.02
By Jeff Kolb
Phone (636) 441-0200

Handwritten: *VE # 08-29*

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

a) The existing conditions call out item 220 placing 8" rock base. Our proposed changes would call for the rock base to be increased to 18".

Advantage: By going with 18" it will give a longer life and less maintenance.

b) See attachment A

2. Estimate of reduction in construction costs. \$601,124.80

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

See a) above

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

04/14/2008

(date)

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

05/05/2008

(date)

Same completion date. Please notify by 05/05 to build new grading file.

(effect)

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

None

(date and/or dates)

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ATTACHMENT A

B) Detailed estimate of the cost of performing the work under the existing contract and under the proposed change:

No base requires 12" asphalt and 4" base rock or 9" concrete and 4" base rock. ✓

18" base option requires 8" asphalt or 8" of concrete. ✓

Using unit pricing from Contract 071221-502 for asphalt and base rock. 590/591

\$21.33 s.y. on 8" asphalt concrete pavement for SP125C / 8" = \$2.6663 per inch. ✓

\$5.38 s.y. on 4" type 1 aggregate for base / 4" = \$ 1.345 per inch. ✓

Proposed base was 8" = .44% of 18" ✓

Net difference in pavement from 12" & 8" = 4" x .56% short fall of base = 2.24" of added pavement. ✓

Net difference in base from 4" & 0" = 4" x .56% shortfall = 2.24" of added type 1 base rock. ✓

Paving would be 10.24" @ \$2.6663 per inch = \$27.3029 s.y. ✓

Type 1 base rock 2.24" @ \$1.3450 per inch = \$3.0128 s.y. ✓

Compacting in cut could be eliminated ? \$ 53,962.50

See EP6?

186,000 s.y. @ \$27.3029 paving with 8" \$5,078,339.40 ✓

186,000 s.y. @ \$ 3.0128 base rock \$ 560,380.80 ✓

Total cost of current design with 8" \$5,692,682.70 ✓

186,000 s.y @ \$21.33 paving with 18" \$3,967,380.00 ✓

NET DIFFERENCE \$1,725,302.70 ✓

Credit additional 6" undercut 42,754 c.y. @ \$1.60 (\$68,406.40)

Credit additional file prep L.S. (\$22,000.00)

Credit additional 10" base rock 256,529 s.y.(minus finishing) @ 2.50 (\$641,322.50)

Credit additional longer haul on A to replace the C 72,683 c.y. @ 3.00 (\$218,049.00)

800' South of then end of our project

Credit additional stripping 20,000 c.y. @ \$1.60 (\$32,000.00)

Credit additional Class C 20,000 c.y. @ \$7.12 (\$142,400.00)

TOTAL VALUE ENGINEERING \$601,124.80

D) Any itemized list of the contract items of work affected by the proposed changes, including any quantity variation attributable thereto.

Line No. 0150 2037075 Compacting in Cut	Deleted
Line No. 0220 3049905 Misc. Placing 8" rock base	Increase 10"

E) A description of an previous use or submission of the same proposal by the contractor: N/A

CONSTRUCTION VALUE ENGINEERING CONCEPT PROPOSAL
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ATTACHMENT B

Additional Comments:

The worse case scenario would be to purchase rock from the quarry to replace the shortfall on the site, rather than going South 800' from the end of the job.

Credit purchasing crushed stone 5,961.c.y. @ \$23.06	(\$137,460.66)
Credit purchasing Type 1 ditch liner 1,410 c.y. @ \$22.25	(\$31,372.50)
Credit purchasing Type 2 ditch liner 2,208 c.y. @ \$34.32	(\$75,778.56)
Credit purchasing Type 3 ditch liner 2,963 c.y. @ \$43.12	(\$127,764.56)
Credit purchasing Type 4 ditch liner 138 c.y. @ \$36.08	(\$4,979.04)
Credit purchasing rock blanket 1,940 c.y. @ \$38.33	(\$74,360.20)
Credit purchasing rock 1,114 c.y. @ \$20.10	(\$22,391.40)
Credit purchasing bedding 1,415 c.y. @ \$22.07	(\$31,229.05)
Estimated cost savings after all the credits	(\$270,188.83)

Additional Comments:

See attachment B

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

Comments: BASED ON THE ATTACHED INFORMATION, I BELIEVE THIS VALUE ENGINEERING CONCEPT HAS MERIT. CONTRACTOR SHOULD SUBMIT THE V.E. PROPOSAL IN A MORE CLEAR FASHION WITH CORRECT INFORMATION. ANY V.E. PAYMENT COULD BE DEFERRED UNTIL AFTER PAVING CONTRACT IS LET IN NOVEMBER, 2008. I RECOMMEND APPROVAL OF V.E. CONCEPT.

Michael K. O'Malley 4/16/08

Submitted By Resident Engineer Date

Comments: A thorough and lengthy review of the concept proposal has taken place, including discussions at various levels between MoDOT district and central office staff. While the basic concept carries merit and warranted lengthy consideration, further approval is not recommended due to the following. The district's estimated volume of Class C available south of the job is not adequate to meet the needs for the 18" rock based proposal. In addition, increasing the rock base to 18" reduces AC thickness by only 1 1/2" and has no effect on concrete thickness. W/ alternate pavement bids between AC vs concrete, it is an unknown as to the resulting pavement type. It is estimated that the additional cost

Approval
 Recommended
 Rejection
 Recommended

Roger Schwartz 4/30/08 (see attached comments cont.)

District Engineer Date

Comments: Based upon risks cited above, this VE proposal is rejected.

Approval
 Rejection

0291 for Dave Roberts 5/1/08

State Operations Engineer Date

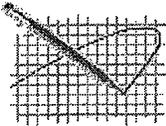
Distribution: Resident Engineer, District Operations Engineer, State Operations Engineer
*Value Engineering Administrator - *MoDOT, P.O. Box 270, Jefferson City, MO 65102

Comments (cont.):

incurred for supplementing the 18" rock base with quarry rock would ultimately result in either a minimal savings with AC or a significant loss/cost with concrete. Thus, this introduces too much risk for MoDOT. Lastly, any delay in decision (e.g. after the letting of the paving contract) could result in a delay in the project operations.

Summary									
Proposal for an 18" rock base instead of the 8" rock base and 4" type 1 aggregate base already designed.									
J5P0592A	contract items affected								
	Clearing and grubbing								
	Class A excavation								
	Class C excavation								
	Compacting embankment								
	Seeding and Mulching								
	Compacting in cut - eliminated								
	Placing 8" Rock Base - eliminated								
	Placing 18" Rock Base - added								
	Furnishing 18" Rock Base - added								
J5P0592F	contract items affected								
	Class A excavation								
	Class C excavation								
	Type 1 aggregate base (4") - eliminated								
	10" SP125C asphalt concrete pavement - eliminated								
	8.5" SP125C asphaltic concrete pavement - added								
J5P0592A	Comments								
1	The amount of class C required to construct an 18" base will require furnishing approximately 56330 cy of class C material at a cost of \$901,280 (using unit cost of \$16.00/cy) if the rock cannot be shot off of right of way.								
2	The difference between placing 256,529 sy of 18" of rock base and the same quantity of 8" of rock base is a cost of \$945,952								
3	The added base will require the typical ditch to be deeper by 1' causing a 5% increase of material to be excavated at an additional cost of \$198,953 in Class A and \$36038 in Class C. However, the typical section would change to a 4:1 ditch slope, a 3' deep ditch and a tie almost 3' outside of the designed tie. See typical sketch...								
4	The 18" base will require an excavation of 4" extra below the design for the 8" base. That is the depth of the 18" base is 26" below finished grade and the depth of the bottom of the 8" base is 22" below finished grade. This results in additional class A excavation of 18,220 cy for a cost of \$29,152 and additional class C excavation of 886 cy for a cost of \$6308. Total cost of additional excavation is \$35,460.								
5	The costs total to \$2,117,683								
6	Using the 18" base will eliminate the Compacting in cut pay item (as per EPG). This will provide a benefit of \$53962.50								
7	The 18" base will rereduce the amount of compacting embankment by 4" extra below the design for the 8" base for the same reason as spelled out in (3). This will result in 18390 cy less at a benefit of \$4965.								
8	The benefits total to \$58,927								
9	The net cost is \$2,058,756								
10	Notes:								
	The above calculations are based on the assumption that rock cannot be obtained off of existing right of way.								
	If rock can be obtained off of existing right of way, the costs of hauling cannot be adequately determined.								
	The cost of items such as clearing and grubbing, seeding and mulching are considered insignificant and are not used in calculations.								

J5P0592F	Comments								
1	The benefit of going from 10" of SP125C to 8.5" of SP125C is \$ 1,025,957								
2	The benefit of eliminating the type 1 aggregate base is \$ 1,090,236								
3	The net benefit is \$2,116,193								



Randall D Potts/D5/MODOT

04/17/2008 02:57 PM

To Patricia L Lemongelli/D5/MODOT@MODOT

cc Geoffrey M Franks/D5/MODOT@MODOT, Nicole A Hood/D5/MODOT@MODOT

bcc

Subject VE Proposal Review Summary - Revised

Patty,

Below is a summary of our VE review. I added concrete pavement and corrected the concrete pavement saving amount.

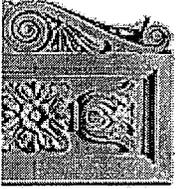
1. The VE needs to be revised to better define all costs.
2. The VE proposal would require deeper ditches resulting in more earthwork.
3. Future saving is based on 1.5" thinner asphalt pavement and elimination of 4" type 1 base. Our estimate is \$2,116,200.00 savings. If concrete pavement then the savings is \$1,090,240.00.
4. Grading project additional costs based on additional quarry supplied rock base is \$ 2,058,760.00, a saving of \$57,440.00 if the paving contract is asphalt.
5. Grading project additional costs based on additional rock base from the R/W is \$ 1,600,550.00, a savings of \$ 515,670.00 if the paving contract is asphalt.
6. Grading project additional costs based on additional quarry supplied rock base is \$ 2,058,760.00, a cost of \$968,520.00 if the paving contract is concrete.
7. Grading project additional costs based on additional rock base from the R/W is \$ 1,600,550.00, a cost of \$ 510,310.00 if the paving contract is concrete.

Recommend that Kolb resubmit their proposal with more detail based on obtaining the Class C for the existing R/W. Kolb needs to determine the location and configuration of the borrow area. Extending the project limits further south with the VE proposal will have to be approved by FHWA since it is a change of project limits. We can provide Kolb with the future pavement designs.

One question - How do we decide on the future savings?

Randall D. Potts
MoDOT, District 5 Design
1511 Missouri Blvd. P.O. Box 718
Jefferson City, MO 65109
Phone (573) 526-0515
Fax (573) 751-8267
Email randall.potts@modot.mo.gov

MoDOT designers addressed this and have quantified estimated rock available. Not enough for 18" rock base or even the additional 4" needed for 12" rock base.



Nicole A Hood/D5/MODOT

04/22/2008 04:06 PM

To : Joshua D Kincaid/D5/MODOT@MODOT

cc Patricia L Lemongelli/D5/MODOT@MODOT, Randall D
Potts/D5/MODOT@MODOT

bcc

Subject: Route 5 VE Proposal

Based upon the cross sections from D8 that I forwarded to you earlier today, the estimated quantity of Class C with 15% swell from the rock bluffs south of Olathe is 28,400 cubic yards +/- . To place an additional 4" for a total 12" rock base, the contractor would need an estimated 30,340 cubic yards.

If we accept their conceptual VE, please have them submit their proposal with detailed cross sections of the rock area so we can confirm the quantities. Thanks and let me know if you have any questions.

Nicole Kolb Hood, P. E.
Transportation Project Manager
Missouri Department of Transportation
Work: (573) 526-6997
Fax: (573) 751-8267
Email: nicole.hood@modot.mo.gov

Earthwork Spreadsheet

Shrinkage Factor - Swell Factor -
 1.15
 1.15

STATION	FACTOR	END AREA	VOLUME	Class 'A' Excavation Shrink Factor	CL-'A' Shrink	Station	Job No. - Designer - File Location/Name - Station	Class 'C' Excavation Swell Factor	CL-'A' Swelled	Add Yardage	END AREA	VOLUME	Excavation Class 'A'	Excavation Class 'C'	Embankment	Add Yardage	END AREA	VOLUME	Excavation Class 'A'	Excavation Class 'C'	Embankment	Mass	Balance
4300	1.8519	0	0	0.87	248	248		519	597	0	0	0	285	519	0	0	0	0	285	519	0	0	845
4400	1.8519	154.1	154.1	0.87	496	496		1280	1472	280.3	280.3	0	855	1789	0	0	0	0	855	1789	0	0	2812
4500	1.8519	153.8	153.8	0.87	496	496		1439	1686	410.8	410.8	0	1425	3248	0	0	0	0	1425	3248	0	0	4974
4600	1.8519	154.2	154.2	0.87	355	355		1415	1627	371.5	371.5	0	1833	4663	0	0	0	0	1833	4663	0	0	6956
4700	1.8519	66.2	66.2	0.87	179	179		1677	1929	392.5	392.5	0	2039	6340	0	0	0	0	2039	6340	0	0	9064
4800	1.8519	44.9	44.9	0.87	193	193		1646	1893	513.3	513.3	0	2260	7986	0	0	0	0	2260	7986	0	0	11149
4900	1.8519	74.7	74.7	0.87	269	269		1226	1410	376.5	376.5	0	2569	9212	0	0	0	0	2569	9212	0	0	12828
5000	1.8519	92.4	92.4	0.87	301	301		978	1125	266.7	266.7	0	2915	10190	0	0	0	0	2915	10190	0	0	14253
5100	1.8519	94.4	94.4	0.87	152	152		447	514	241.4	241.4	0	3090	10637	0	0	0	0	3090	10637	0	0	14920
5200	1.8519	0	0	0.87	0	0		0	0	0	0	0	3090	10637	0	0	0	0	3090	10637	0	0	14920
	-96.2963	0	0	0.87	0	0		0	0	0	0	0	3090	10637	0	0	0	0	3090	10637	0	0	14920
	0	0	0	0.87	0	0		0	0	0	0	0	3090	10637	0	0	0	0	3090	10637	0	0	14920
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	0	0	0	0.87	0	0		0	0	0	0	0	3090	10637	0	0	0	0	3090	10637	0	0	14920
	0	0	0	0.87	0	0		0	0	0	0	0	3090	10637	0	0	0	0	3				

VALUE ENGINEERING CHECK SHEET

TYPE OF WORK

(Check one that applies)

- Bridge/Structure/Footings
- Drainage Structures (RCP, RCB, CMP's ect)
- TCP/MOT
- Paving (PCCP, ect.)
- Grading/MSE Walls
- Signal/Lighting/ITS
- Misc. _____

SUMMARY OF PROPOSAL

(If needed, condense summary to a couple of lines)

Change 8" rock base to 18" rock base.

SCANNING OF DOCUMENT

If the proposal is large, please mark or make note, which pages need to be scanned into the database. If there are special instructions, make note of them here.

All