Form C-104
Rev. 2/01

CONSTRUCTION VALUE ENGINEERING CONCEPT PROPOSAL
MISSOURI DEPARTMENT OF TRANSPORTATION

Date 1/16/09

Contract ID 070427-607 Job No. J6P0672C

County St. Charles Route ~~64~~ 40 Original Bid Cost $22,949,743.47

Contractor Millstone Bangert, Inc. By Jim Schaefer

Designed By Millstone Bangert, Inc. Phone 636-949-0037

VECP 09-05

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

Upon reviewing the proposed storm sewer for the project, MBI has designed alternate options to eliminate all the jacked pipe shown to be installed, adjusted alignments to maintain drainage during the staged construction, revised slopes to eliminate storm sewer and inspected existing storm sewer to be utilized with the proposed design changes. Drawings of the proposed changes have been previously submitted for preliminary approval and attached is a cost breakdown of the proposed changes for the defined locations.

2. Estimate of reduction in construction costs. $89,328.09
3. Prediction of any effects the proposed change(s) will have on other department costs, such as maintenance and operations.

The proposed changes either have no changed effect or reduce the anticipated future maintenance.

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

1/16/09
(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: Recommend approval of V.E., will include material costs for unused material already purchased. Also limited amount of survey needed for design. MoDOT Design has reviewed and verified changes will be as good as plan design

Submitted By Resident Engineer — Date: 1/20/09

Comments: MoDOT Design has reviewed as noted above. I recommend this V.E.

☑ Approval Recommended
☐ Rejection Recommended

District Engineer — Date: 1-21-09

Comments: Approval given based upon above comments.

☒ Approval
☐ Rejection

OZM for Dave Ahlvers
State Operations Engineer — Date: 1/21/09

Hwy 40 / Lake St. Louis

Storm Sewer VE Adjustments

		Location	Item	Unit	Quantity	Unit Price	Cost
System 2	Plan	2-1FES to 2-3 FES	Jacked 36" RCP	LF	-152	$178.00	($27,056.00)
		2-4 EE to MH 27A	5x3 Precast Conc. Drop Inlet	FT	-10	$455.00	($4,550.00)
			Class 3 Excavation	CY	-28.5	$14.00	($399.00)
			Grate & Bearing Plate 5x3	EA	-1	$1,000.00	($1,000.00)
			Jacked 30" RCP	LF	-86	$132.00	($11,352.00)
			Adjust Manhole	EA	-1	$1,050.00	($1,050.00)
	Alternate	2-1FES to 2-3 FES	Class 3 Excavation	CY	256	$14.00	$3,584.00
			36" RCP Class 3	LF	153	$89.00	$13,617.00
			Type A Collar(Temp.)	EA	2	$693.00	$1,386.00
		2-4,EE	5x3 Precast Conc. Drop Inlet	FT	6	$455.00	$0.00
			Class 3 Excavation	CY	28.5	$14.00	$399.00
			Grate & Bearing Plate 5x3	EA	1	$1,000.00	$1,000.00
			30" CMP	LF	10	-$60.00	$600.00
			Surveying (Cole)	LS	1	$1,356.25	$1,356.25
						Savings:	($23,464.75)
System 3	Plan	3-1FES to 3-2 MH	27" RCP Class 3	LF	-72	$56.00	($4,032.00)
			Jacked 27" RCP	LF	-102	$112.00	($11,424.00)
			Class 3 Excavation	CY	-20	$14.00	($280.00)
		3-2 MH	Adjust Manhole	EA	-1	$1,050.00	($1,050.00)
			Class 3 Excavation	CY	-19.7	$14.00	($275.80)
			Frame & Cover Type 2	EA	-1	$485.00	($485.00)
	Alternate	3-1FES to 3-2 MH	27" RCP Class 3	LF	189	$56.00	$10,584.00
			Class 3 Excavation	CY	201.7	$14.00	$2,823.80
			Pipe Collar Type A	EA	1	$693.00	$693.00
						Savings:	($3,446.00)
System 5	Plan	5-1 MH	Precast Conc. Manhole 72"	FT	-26	$527.00	($13,702.00)
			Class 3 Excavation	CY	-143.6	$14.00	($2,010.40)
			Manhole Frame & Cover Type 2	EA	-1	$485.00	($485.00)
		5-1 MH to 5-2 MH	Class 3 Excavation	CY	-401	$14.00	($5,614.00)
			42" RCP Class 5	LF	-123	$149.00	($18,327.00)
		5-2 MH	Precast Conc. Manhole 72"	FT	-23	$527.00	($12,121.00)
			Type 1A Frame and Cover	EA	-1	$460.00	($460.00)
			Class 3 Excavation	CY	0	$14.00	$0.00
		5-2 MH to 5-3 FES	Class 3 Excavation	CY	0	$14.00	$0.00
			42" RCP Class 5	LF	-108	$149.00	($16,092.00)
		5-3 FES	42" FES	EA	-1	$1,742.00	($1,742.00)
			Rock Lining	CY	-46.7	$47.00	($2,194.90)
		51-1S1	5'x3' Precast Drop Inlet	FT	-5	$455.00	($2,275.00)
			Grate & Bearing Plate 5'x3'	EA	-1	$1,000.00	($1,000.00)
			Class 3 Excavation	CY	-17.4	$14.00	($243.60)
		51-1S1 to 5-2 MH	Class 3 Excavation	CY	-29.8	$14.00	($417.20)
			15" RCP Class 3	LF	-116	$42.00	($4,872.00)
	Alternate	5-1 S1	5'x3' Precast Drop Inlet	FT	7	$455.00	$3,185.00
			Class 3 Excavation	CY	14.2	$14.00	$198.80
			Grate & Bearing Plate 5'x3'	EA	1	$1,000.00	$1,000.00
		5-1 MH to 5-2 MH	Class 3 Excavation	CY	37	$14.00	$518.00
			18" RCP Class 3	LF	109	$44.00	$4,796.00
		5-2 MH	Precast Conc. Manhole 72"	FT	32	$527.00	$16,864.00
			Type 1A Frame and Cover	EA	1	$460.00	$460.00
			Class 3 Excavation	CY	0	$14.00	$0.00
		Ex. 24" to 5-2 MH	Class 3 Excavation	CY	0	$14.00	$0.00
			24" RCP Class 3	LF	24	$51.00	$1,224.00
			Type A Collar	EA	1	$693.00	$693.00
		5-2 MH to 5-3 FES	Class 3 Excavation	CY	72	$14.00	$1,008.00
			42" RCP Class 5	LF	143	$149.00	$21,307.00
		5-3 FES	42" FES	EA	1	$1,742.00	$1,742.00
			Rock Lining	CY	22.2	$47.00	$1,043.40
		51-1S1	5'x3' Precast Drop Inlet	FT	5	$455.00	$2,275.00
			Grate & Bearing Plate 5'x3'	EA	1	$1,000.00	$1,000.00
			Class 3 Excavation	CY	17.4	$14.00	$243.60
		51-1S1 to 5-2 MH	Class 3 Excavation	CY	29.8	$14.00	$417.20
			15" RCP Class 3	LF	116	$42.00	$4,872.00
						Savings:	($18,709.10)

Hwy 40 / Lake St. Louis

Storm Sewer VE Adjustments

		Location	Item	Unit	Quanity	Unit Price	Cost
System 8	Plan	91-1S2 to 91-2 FES	5x3 Drop Inlet	FT	(5)	$455.00	($2,275.00)
			Class 3 Excavation	CY	(65.5)	$14.00	($917.00)
			Grate & Bearing Plate 5' 1" x 3' 1"	EA	(1)	$1,025.00	($1,025.00)
			18" RCP	LF	(90)	$44.00	($3,960.00)
			18" FES	EA	(1)	$657.00	($657.00)
		92-1 S1 to 92-2 FES	Jacked 21" RCP	LF	(66)	$94.00	($6,204.00)
			Class 3 Excavation	CY	(26.9)	$14.00	($376.60)
			5x3 Drop Inlet	FT	(3)	$455.00	($1,365.00)
			Grate & Bearing Plate 5'x3'	EA	(1)	$1,000.00	($1,000.00)
			21" FES	EA	(1)	$752.00	($752.00)
		93-1 S1 to 93-2 FES	Jacked 21" RCP	LF	(64)	$94.00	($6,016.00)
			Class 3 Excavation	CY	(26.4)	$14.00	($369.60)
			5x3 Drop Inlet	FT	(3)	$455.00	($1,365.00)
			Grate & Bearing Plate 5'x3'	EA	(1)	$1,000.00	($1,000.00)
			21" FES	EA	(1)	$752.00	($752.00)
	Alternate	Box Culvert to 91-1 S1	Pipe Collar Type C	EA	1	$1,385.00	$1,385.00
			30" RCP	LF	190	$66.00	$12,540.00
			Class 3 Excavation	CY	211	$14.00	$2,955.56
			5x3 Drop Inlet	FT	8	$455.00	$3,640.00
			Grate & Bearing Plate 5' 1" x 3' 1"	EA	1	$1,025.00	$1,025.00
						Savings:	($6,488.64)
System 4	Plan	4-7 S2 to 41-1S1	21" RCP	LF	(88)	$47.00	($4,136.00)
			Class 3 Excavation	CY	(128.9)	$59.00	($7,606.10)
	Alternate	4-7 S2 to 41-1S1	21" RCP	LF	72	$47.00	$3,384.00
			Class 3 Excavation	CY	105.5	$59.00	$6,224.50
						Savings:	($2,132.60)
Utility Casing	Plan	Prospect Rd.	SS Utility Pipe (12" DIP)	LF	(95)	$63.00	($5,985.00)
			Gas Utility Pipe (8" DIP)	LF	(95)	$69.00	($6,555.00)
	Alternate	Prospect Rd.	18" Class 3 RCP	LF	168	$44.00	$7,392.00
						Savings:	($5,148.00)
System 49	Plan	49-1A to 49-3 FES	Class 3 Rock	CY	(187.5)	$59.00	($11,062.50)
			15" RCP	LF	(285)	$42.00	($11,970.00)
			15" FES	EA	(1)	$623.00	($623.00)
			4x2 Drop Inlet	FT	(6)	$541.00	($3,246.00)
			Curved Vane Grate (4x2)	EA	(2)	$630.00	($1,260.00)
			Rock Lining	CY	(1.8)	$47.00	($84.60)
			Type E Curb	LF	(300)	$6.00	($1,800.00)
	Alternate	Revised slope	Class A Excavation	CY	2,198	$4.00	$8,792.00
			Class C Excavation	CY	111	$10.00	$1,110.00
		49-1 & 49-2	4x2 Drop Inlet (Material Credit)	FT	6	$88.00	$528.00
			Curved Vane Grate (Mat. Credit)	EA	2	$378.00	$756.00
			Survey Re-staking	LS	1	$1,247.50	$1,247.50
						Savings:	($17,612.80)
System 73	Plan	71-1 S1	6'x3' Precast Drop Inlet	FT	(4.0)	$455.00	($1,820.00)
			Class 3 Excavation	CY	(13.1)	$14.00	($183.40)
			Grate & Bearing Plate 5'x3'	EA	(1.0)	$1,000.00	($1,000.00)
		71-1 S1 to 73-1 A	18" RCP	LF	(34.0)	$44.00	($1,496.00)
			Class 3 Excavation	CY	(13.7)	$14.00	($191.80)
		73-1 A	2'x2' Precast Drop Inlet	FT	(8.0)	$390.00	($3,120.00)
			Class 3 Excavation	CY	(0.3)	$14.00	($4.20)
			Curved Vane & Grate 2x2	EA	(1.0)	$450.00	($450.00)
		73-1 A to 73-2 A	18" RCP	LF	(36.0)	$44.00	($1,584.00)
			Class 3 Excavation	CY	0.0	$14.00	$0.00
		73-2 A	Drain Basin	EA	(1.0)	$5,000.00	($5,000.00)
	Alternate	71-1 S1	5'x3' Drop Inlet (Material)	FT	4	$114.00	$456.00
			Grate & Bearing Plate 5'x3' (Material)	EA	1	$700.00	$700.00
		73-1 A	2'x2' Drop Inlet (Material)	FT	8	$58.50	$468.00
			Curved Vane & Grate 2x2 (Material)	EA	1	$198.00	$198.00
		73-2 A	Drain Basin w/ Grate & Bearing Plate	EA	1	$700.00	$700.00
						Savings:	($12,327.40)
						Total Savings:	($89,329.09)

VALUE ENGINEERING CHECK SHEET

N/A

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)

Eliminated jacked pipe shown on the plans by adjusting alignments to maintain drainage during staged construction, and revised slopes to eliminate storm sewer.

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