



O: 573.445.8331
F: 573.445.0266

2602 NORTH STADIUM BLVD.
COLUMBIA, MO 65202

WWW.EMERYSAPP.COM

April 30, 2013

Mr. Greg Chapman, R.E.
Missouri Dept. of Transportation
1501 Malcolm Mosby Dr.
Neosho, MO 64850

**RE: Value Engineering - Paved Ditch
Rt I-44 Newton Cty
Job J7I0691**

Mr. Chapman:

This letter is being submitted in regards to the attached Value Engineering Proposal. The current design specifies that the ditches on each side of Rangeline and Ramps 1 & 3 shall be protected with Concrete Paved Ditch. We believe that replacing the Paved Ditches with a combination of Rock Lining and Type 3 Turf Reinforcing Mat will provide a higher quality product at a lower price that will not only improve the overall aesthetics of the project but also reduce the environmental impact on downstream property owners due to a reduction in runoff.

Our proposal includes the replacement of all paved ditch to the North of I-44 due to the fact that each of the existing drainage ditches to the North of the new Ramps is currently vegetated and is successfully handling all run off with little to no erosion issues. Even though no additional runoff will impact these areas at the completion of the project MoDOT and Emery Sapp & Sons decided that each pipe outlet would benefit from additional protection with Rock Lining. The utilization of Rock Lining at each outfall will minimize erosion as well as run off velocities. All areas where Rock Lining will be added to the project are shown in the attached drawing. Each area beyond the Rock Lining will then be protected by a Type 3 Turf Reinforcing Mat which will provide a durable vegetated product that will increase the permeable area on the project. Another advantage to the added vegetation and increase in permeable area is the reduction in high velocity run off which ultimately contributes to the potential for undermining of paved ditches.

In closing, it is our belief that these design modifications will provide several improvements that will not only exceed the original design goals but also improve the overall quality of the project. Please review our recommended design change and let me know if it is acceptable as soon as possible. If you need any additional information, please don't hesitate to call.

Sincerely,

Emery Sapp & Sons, Inc.

Josh Doerhoff P.E.
Project Manager
Attachment(s)

VALUE ENGINEERING CHANGE PROPOSAL MISSOURI DEPARTMENT OF TRANSPORTATION

Conceptual Proposal Final Proposal Date 04-30-2013

Contract ID 120525-G01 Job No. J7I0691

County Newton Route I-44 Original Contract Amount \$8,062,912.88

Contractor Emery Sapp & Sons Inc By Josh Doerhoff

Designed By MoDOT Phone 573-445-8331

VECP# 13-30 (to be completed by C.O.) VECP or PDVECP

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

The existing design calls for the construction of Paved Ditch on both sides of Rangeline Road and Ramps 1 & 3. We would like to propose the replacement of all of the Paved Ditches on the North Side of I-44 with a combination of Turf Reinforcing Mat and Rock Lining. Current conditions allow vegetation to handle all run off with little to no erosion issues. The replacement of Paved Ditches with a Type 3 Turf Reinforcing Mat and Rock lining will increase the amount of permanent vegetation as well as overall permeable area on the project. This increase in vegetation will also help reduce runoff velocities which contributes to negative impacts on downstream property.

2. Estimate of reduction in construction costs. \$141,466.95

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

None

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

04-30-13
(date)

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

05-10-26 Grading Operations will begin in areas of Paved Ditch
(date) (effect)

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

4-11-13
(date and/or dates)

Additional Comments:

The Joplin RE office recommends approval of this VE based on reviews from design and our environmental group. The Type 3 TRM proposed handles the shear stresses calculated by our design group on this project. In addition, paved ditches typically result in downstream degradation problems due to too much velocity and they allow for zero infiltration. In addition, many we currently have in our system are undercut and caving in. If the TRM is installed correctly, mowers should have no problems traversing it. We recommend approval of this VE on a 50/50 basis. In addition, this will save time and money.

Comments:

5/1/13

Submitted By Resident Engineer

Date

Comments:

I concur.

**Approval
Recommended**

**Rejection
Recommended**

District Engineer

Date

Comments:

**Approval
Recommended**

**Rejection
Recommended**

Federal Highway Administration
Required for FHWA Full Oversight Projects

Date

Comments:

Approval

Rejection

State Construction and Materials Engineer

Date

Newton Cty J7I0691

Replacement of Paved Ditch with Turf Reinforcing Mat & Rock Lining

VE Savings vs Cost

1	X	Paved Ditch (See Attached Breakdown)	3,915.5	SYS	X	\$ 44.50	/ SY	\$ 174,239.75
-1	X	Restocking Fee for Wire Mesh already Delivered	3,915.5	SYS	X	\$ 0.35	/ SY	\$ (1,370.43)
-1	X	Cure already Purchased	3,915.5	SYS	X	\$ 0.16	/ SY	\$ (626.48)
-1	X	Seeding	0.81	AC	X	\$ 1,450.00	/ AC	\$ (1,173.03)
-1	X	Type 3 Turf Reinforcing Mat	3,915.5	SYS	X	\$ 6.83	/ SY	\$ (26,742.87)
-1	X	Rock Lining (See Attached Drawing)	52.0	CYS	X	\$ 55.00	/ CY	\$ (2,860.00)

SUBTOTAL = \$ 141,466.95

J7I0691 Paved Ditch Replacement

Station	To	Station	Location	Area	Units
125+51	-	127+34	Bus 49 LT	447.2	SY
127+34	-	131+62	Bus 49 LT	1350.6	SY
1+25	-	2+49	Ramp 3 LT	142.0	SY
126+22	-	131+91	Bus 49 RT	1431.1	SY
9+72	-	10+75	Ramp 1 LT	256.4	SY
133+00	-	135+16	Bus 49 RT	423.0	SY
133+60	-	134+45	Bus 49 LT	190.2	SY
		Under Bridge West Side		-173.0	SY
		Under Bridge East Side		-152.0	SY

Total Area Eliminated = 3915.5 SY

STA. 130+59.04, 47.79' LT.
2'x2' TYPE "D" D.I. &
15"x46' GROUP A PIPE
& 1-15" F.E.S.

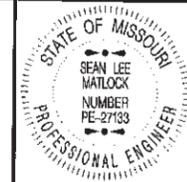
CURVE NBL-1	
PI	0+36.06
PC	0+00.00
PRC	0+71.77
Δ	13° 42' 27.8" (LT)
D	19° 05' 54.9"
L	71.77'
T	36.06'
R	300.00'
e	2.0%

CURVE NBL-2	
PI	1+62.66
PRC	0+71.77
PT	2+48.27
Δ	33° 42' 27.8" (RT)
D	19° 05' 54.9"
L	176.49'
T	90.88'
R	300.00'
e	2.0%

CURVE SBL-3	
PI	4+24.66
PC	3+37.84
PRC	5+06.86
Δ	32° 16' 51.1" (RT)
D	19° 05' 54.9"
L	169.02'
T	86.82'
R	300.00'
e	2.0%

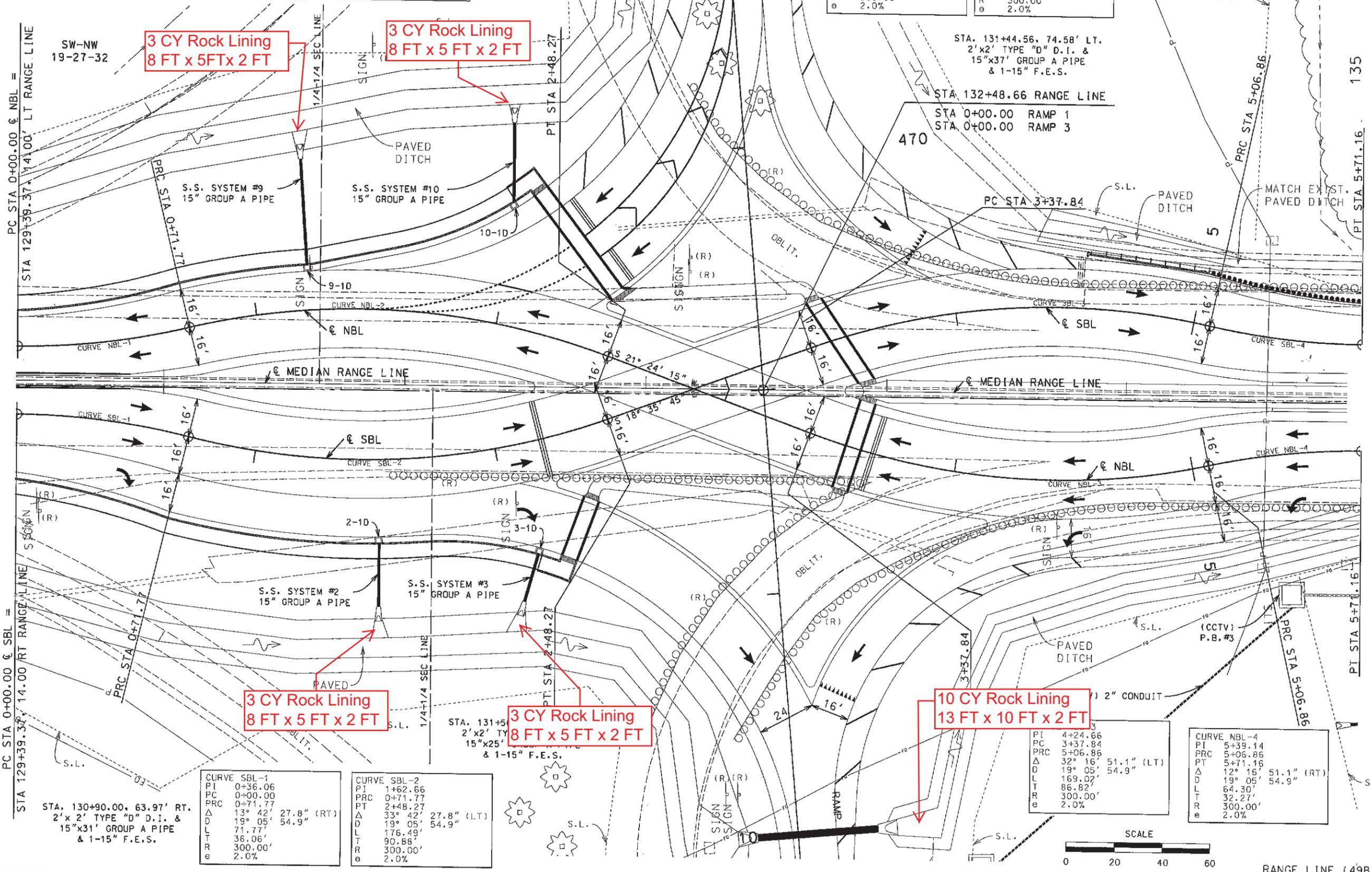
CURVE SBL-4	
PI	5+39.14
PRC	5+06.86
PT	5+71.16
Δ	12° 16' 51.1" (LT)
D	19° 05' 54.9"
L	64.30'
T	32.27'
R	300.00'
e	2.0%

SEE SPECIAL SHEET
FOR INTERSECTION
AND ISLAND DETAILS



DATE PREPARED
3/28/2012

ROUTE	I-44	STATE	MO
DISTRICT	SW	SHEET NO.	6
COUNTY	NEWTON		
JOB NO.	J710691		
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO.			



SW-NW
19-27-32

3 CY Rock Lining
8 FT x 5 FT x 2 FT

3 CY Rock Lining
8 FT x 5 FT x 2 FT

STA. 131+44.56, 74.58' LT.
2'x2' TYPE "D" D.I. &
15"x37' GROUP A PIPE
& 1-15" F.E.S.

470

STA. 132+48.66 RANGE LINE

STA. 0+00.00 RAMP 1
STA. 0+00.00 RAMP 3

PC STA 3+37.84

135

PT STA 5+71.16

PT STA 5+71.16

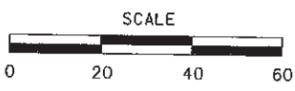
PT STA 5+06.86

CURVE SBL-1	
PI	0+36.06
PC	0+00.00
PRC	0+71.77
Δ	13° 42' 27.8" (RT)
D	19° 05' 54.9"
L	71.77'
T	36.06'
R	300.00'
e	2.0%

CURVE SBL-2	
PI	1+62.66
PRC	0+71.77
PT	2+48.27
Δ	33° 42' 27.8" (LT)
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L	176.49'
T	90.88'
R	300.00'
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PI	5+39.14
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PT	5+71.16
Δ	12° 16' 51.1" (RT)
D	19° 05' 54.9"
L	64.30'
T	32.27'
R	300.00'
e	2.0%



RANGE LINE (49B)

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT 1-888-275-6636

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.