

CONSTRUCTION VALUE ENGINEERING CONCEPT PROPOSAL  
MISSOURI DEPARTMENT OF TRANSPORTATION

Date April 21, 2008

Contract ID \_\_\_\_\_

Job No. J1Q2160

County \_\_\_\_\_ Route \_\_\_\_\_

Original Bid Cost \$45,600.00

Contractor Leath & Sons, Inc.

By \_\_\_\_\_

Designed By \_\_\_\_\_

Phone \_\_\_\_\_

*VE # 08-32*

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

Change 12: std pipe to 8" and 10" std pipe (constant diameter)  
Also change anchor bolts to 1-1/2" diameter. Calculations and drawings attached.

2. Estimate of reduction in construction costs.

\$12,000.00

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.

approval required 10 days  
(date)

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

10 days

(date)

(effect)

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

May 10, 2007-Job J6Q2102/April 10, 2008-Job J0Q2151  
(date and/or dates)

Additional Comments:

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

Comments: This proposal has been submitted and approved by various districts throughout the state.

Anna R. Rizo 4/28/08  
Submitted By Resident Engineer Date

Comments: This proposal has been approved by other Districts w/ DMS projects, most recent Dist 10 on a project let the same month as our. Need to add this design of posts before we let another DMS project.

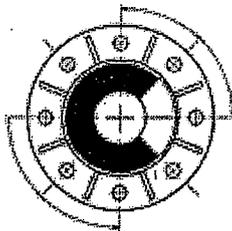
Approval Recommended  
 Rejection Recommended

[Signature] 5-5-08  
District Engineer Date

Comments: See attached E-Mail from Bridge Division

Approval  
 Rejection

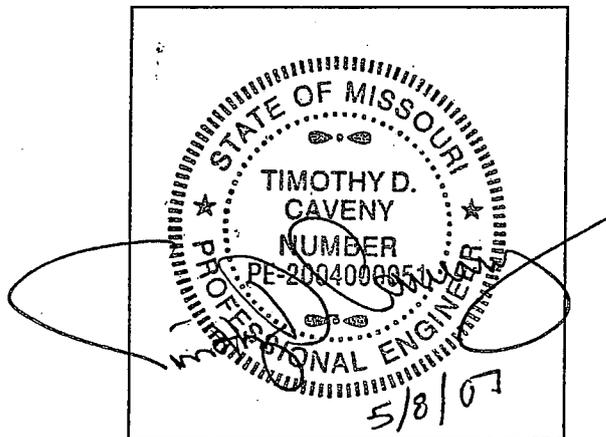
David D. Green 5-12-08  
State Operations Engineer BAW Date



**COWELL**  
**ENGINEERING**  
STRUCTURAL ENGINEERS

**Structural Calculations For:**

**MoDot DMS Support  
MO  
Project No.: 07059**



THE PERSONAL SEAL AFFIXED TO THIS SHEET INDICATES THAT THE PROFESSIONAL ENGINEER WHOSE NAME APPEARS THEREON HAS PREPARED OR HAS DIRECTED THE PREPARATION OF THESE STRUCTURAL CALCULATIONS. OTHER DRAWINGS AND DOCUMENTS NOT EXHIBITING THIS SEAL SHALL NOT BE CONSIDERED PREPARED BY OR THE RESPONSIBILITY OF THE UNDERSIGNED.

3008 Sutton Boulevard  
Saint Louis, Missouri 63143  
314.644.4002 OFFICE  
314.644.1988 FAX  
[www.cowelleng.com](http://www.cowelleng.com)

PROJECT: Mo Dot DMS Support

CLIENT: Hutt Fab

BY TDC DATE 5/3/07 W.O.# 07059

CHECK \_\_\_\_\_ DATE \_\_\_\_\_ SHEET 1 OF \_\_\_\_\_

## DESIGN Summary

WIND LOAD - PER AASHTO LUMINOUS 4<sup>th</sup> Ed.

$C_d = 1.7$  VMS SIGNS

$C_d = 1.1$  STRUCTURE

COLUMNS - 24' STRUCTURE

10<sup>3/4</sup>" O.D. x .365"

$F_y = 42$  ksi

14' - 10" STRUCTURE

8<sup>5/16</sup>" x 0.322"

$F_y = 42$  ksi

PROJECT: MoDot DMS Support

CLIENT: Huff fab

BY DC DATE 5/3/07 W.O.# 07059

CHECK \_\_\_\_\_ DATE \_\_\_\_\_ SHEET 2 OF \_\_\_\_\_

SIGN SIZE  $6'-8\frac{3}{4}" \times 20'-8\frac{1}{4}"$

WIND PRESSURE PER 4th Ed Luminaires

$$q_w = 0.00256(90)^2(1.14)(.94) = 22.2 \text{ psf}$$

$$\text{Sign} = 22.2(1.7) = 38 \text{ psf}$$

$$\text{CAL} = 22.1(1.1) = 24 \text{ psf}$$

$$\text{WT of SIGN} = 2150 \#$$

$$\text{COLUMN DESIGN } (h = 16'-11" + 7' = 24')$$

GROUP I

$$P_{DL} = \frac{2150}{2} + 24(50) = 2275 \quad e = \frac{10.75}{2} + 3 + 6 = 14.38"$$

$$M_{DL} = (2150/2)(14.38") = 15,459 \text{ in-Lbs} = 1288 \text{ ft-Lbs}$$

GROUP II CASE I

$$P_{DL} = 2275$$

$$V_w = 38 \text{ psc} (6.75 \times 21) / 2 = 2693$$

$$M_w = 1347 \# (17 + 24) + 24(24)^2 / 2 = 62,139$$

$$2M_w = 12,428 \text{ ft-Lbs}$$

$$M_{tot} = \sqrt{68,427^2 + 12,428^2} = 64,633 \text{ ft-Lbs}$$

$$S_{min} R_{ESD} = \frac{64,633 \times 12}{.66 (42,000)^{4/3}} = 21 \text{ in}^3$$

Try 10" STD . A = 11.91 in<sup>2</sup> S = 29.9 R = 3.67

$$D/t = 10.75 / .365 = 29.4 < \lambda_p = 86.93$$

$$F_b = .66 F_y = .66 (42)^{4/3} = 36.95 \quad f_b = \frac{64,633 (12)}{29.9} = 25,940$$

$$\frac{kl}{r} = \frac{2.1(288)}{3.67} = 164 > C_c = 116.7$$

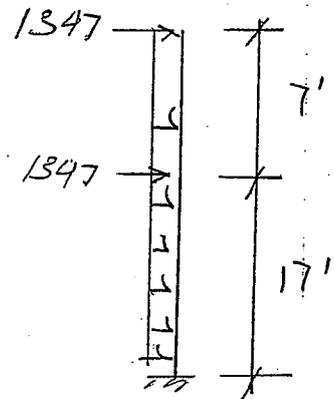
$$F_a = \frac{12\pi^2 E C}{23(164)^2} = 5552.2 \text{ psi}$$

$$f_a = \frac{2275}{11.91} = 191 \text{ psi}$$

$$F_v = .33(42) = 13.86$$

$$f_v = 188.4 \text{ psi}$$

$$CSR = \frac{191}{5552} + \frac{25,940}{36,950} + \left( \frac{230}{13,860} \right)^2 = 0.750$$



GROUP II CASE 2

$P_{DL} = 2275$

$.6V_w = 2693(6) = 1615.8$        $.3V_w = 808$

$.6M_w = 62,139(6) = 37,284$        $.3M_w = 18,641.7$

$M_{tot} = \sqrt{38,572^2 + 18,642^2} = 42,841 < 43,370$

$V_{tot} = \sqrt{1615.8^2 + 808^2} = 1806$       (Load case will not control)

Group III CASE 1 ( $\frac{1}{2}W + ICE + DL$ )

ICE LOAD =  $3 \text{ psf } (21' \times 6.75') + 2(21+6.75)3 = 592^{\#}$

$P_{DL+ICE} = 2275 + \frac{592}{2} + 203 = 2774^{\#}$

$f_a = \frac{2774}{11.91} = 233 \text{ psi}$        $\frac{f_a}{F_a} = 0.04$  while  $\frac{f_b}{F_b}$  decreases by 50%

$\therefore$  Will not control.

Group III CASE 2

By observation will not control.

BSE  $10\frac{3}{4} \times .365$   
 $F_y = 42 \text{ ksi min}$

COLUMN DESIGN  $(h = 7'-10" + 7 = 14.83)$

GROUP II CASE 1 WILL CONTROL:

$P_{DL} = 2275$        $M_{DL} = 15,459$

$V_w = 2693^{\#}$        $2V_w = 539^{\#}$

$M_w = 1347(7.833 + 14.833) = 30,532$        $2M_w = 6106$

$M_{tot} = \sqrt{31,820^2 + 6106^2} = 32,401 \text{ ft-lbs}$

$S_{REQD} = \frac{32,401(12)}{.66(42,000)(4/3)} = 10.52$

TRY 8" STD -       $A = 8.4$        $S = 16.81$        $R = 2.94$

$D/E = 8.625/.322 = 26.79 < 86.9 = \lambda_p$

$\frac{kl}{r} = \frac{2.1(14.83 \times 12)}{2.94} = 127 > C_c = \sqrt{\frac{2\pi^2 E}{42}} = 116.7$

$f_a = \frac{12\pi^2 E}{23(127)^2} = 9.258 \text{ ksi}$        $f_a = \frac{2257}{8.4} = 268.7$

$F_b = .66(42)(4/3) = 36.95 \text{ ksi}$        $f_b = \frac{32,401(12)}{16.81} = 23,129$

$F_v = 13.86$

$f_v = \frac{2746.4}{8.4} = 327 \text{ psi}$

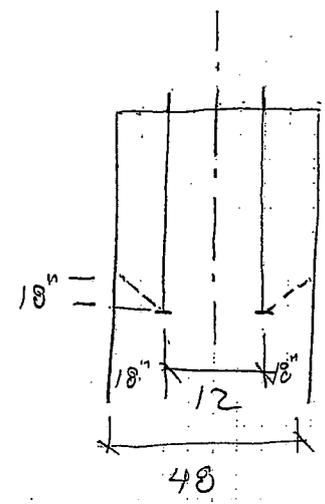
8 5/8" O.D. X .322  
42 ksi

$CSR = \frac{269}{9.258} + \frac{23,129}{36.95} + \left(\frac{327}{13,846}\right)^2 = 0.66 < 1.0$

ANCHOR ROD LENGTH #7 BARS

$$l_d = \frac{0.04(.60)(60000)}{\sqrt{3000}} = 26.29" + 18" = 44"$$

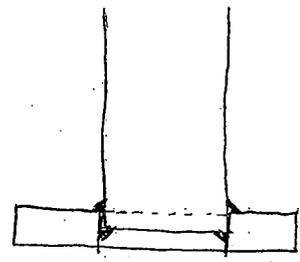
6'-0" Embed is Adequate



CHECK WELD @ BASE

$$S_w = \frac{\pi D^3}{4} (2) = 181.52$$

$$R_{nw} = \frac{775,596 \text{ in-Lbs} / 1000}{181.52} = 4.27 \text{ k/in}$$



$$A_{REQ} = \frac{4.27 \text{ k/in}}{(.3)(60)(.707)(4/3)} = 0.252 + \text{GAP} \quad @ 10" \text{ PIPE}$$

$$S_g = \frac{\pi 8.625^2}{4} (2) = 116.8$$

$$R_{nw} = \frac{32.4(12)}{116.8} = 3.33$$

$$A_{req} = \frac{3.33 \text{ k/in}}{(.3)(60)(.707)(4/3)} = 0.196" + \text{GAP}$$

CHECK DEFLECTION

Tall structure

$$\Delta = \frac{1347(288)^3}{3(29E6)(160.7)} + \frac{1347(204)^2}{6(29E6)(160.7)} (3 \times 288 - 204) =$$

$$\Delta = 2.3 + 1.323 = 3.62" \quad \text{OK}$$

SHORT STRUCTURE

$$\Delta = \frac{1347(177.9)^3}{3(29E6)(72.5)} + \frac{1347(194)^2}{6(29E6)(72.5)} (3 \times 178 - 94)$$

$$1.20 + 0.42 = 1.62"$$

8

CRITERIA:

Analysis

Maintain Strain Compatibility  
 Use full plate area for axial only compression load on plate.

Design

Use ASD 9th to check plate bending  
 Max concrete bearing per AISC J9.  
 Anchor Shear Check Per AISC Specifications.  
 Anchor Tension Check Per AISC Specifications.

INPUT DATA:

Column

Column Size..... HSS10.750X0.365  
 Dim: TW Depth  
 (in) 0.340 10.75

Base Plate

Plate Fy (ksi) ..... 36.000  
 N (Parallel to Web) (in)..... 18.000  
 B (Perpendicular to Web) (in)..... 18.000  
 Plate Thickness (in)..... 1.750

Anchor

Anchor Size..... 1 1/2"  
 Anchor Area (in<sup>2</sup>)..... 1.767  
 Anchor Material..... Other  
 Anchor Modulus (ksi) ..... 29000.00  
 Anchor Strength Fu (ksi) ..... 75.00  
 Thread Included in Shear Plane

← GR-55 Bolts

Footing

Footing Strength f'c (ksi) ..... 3.00  
 Concrete Modulus (ksi) ..... 3122.02  
 Dimension (Parallel to web) (ft)..... 4.00  
 Dimension (Perpendicular to web) (ft).... 4.00

Design Load

Building Code: - None -  
 Load combination: Single Load Case  
 Axial (kip)..... 2.50  
 Vx (kip)..... 2.00  
 Mx (kip-ft)..... 78.60  
 Allowable Stress Increase Factor ..... 1.33

RAM BasePlate V1.5  
 Cowell Engineering, LLC  
 MoDoT DMS  
 1 1/2" dia anchors

Detailed Design Results  
 5/ 8/07 10:33

RESULTS:

Analysis

YBar (in) ..... 5.87  
 Resultant Angle (°)..... 0.00

Plate Bending

Max bending moment from anchor/s #3 in tension  
 Allowable Stress Increase Factor ..... 1.33  
 m [N-0.95d]/2.0 (in)..... 4.700  
 n [B-0.95b]/2.0 (in)..... 4.700  
 Controlling effective width to resist moment (in) ... 3.400  
 Controlling plate bending moment (kip-ft) ..... 5.03  
 fb (ksi) ..... 34.76  
 Fb (ksi) ..... 35.91  
 fb/Fb ..... 0.97  
 Thickness Required (in)..... 1.722  
 Thickness controlled by cantilever action.

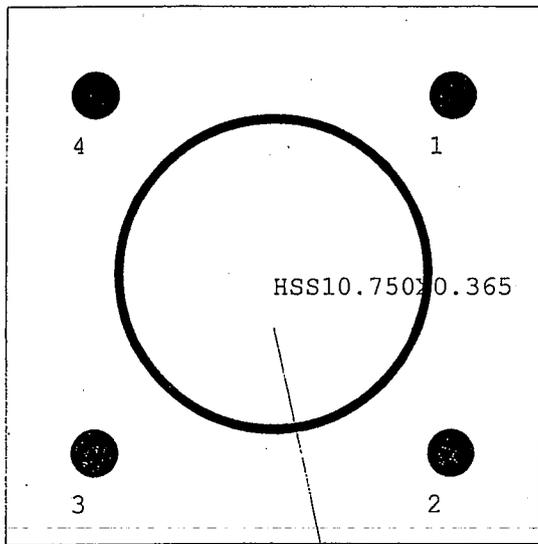
Anchors

Anchor	X(in)	Y(in)	V(kip )	T(kip )	Interaction
1	6.00	6.00	0.50	0.00	0.02
2	6.00	-6.00	0.50	0.00	0.02
3	-6.00	-6.00	0.50	35.48	0.61
4	-6.00	6.00	0.50	35.48	0.61

Bearing

Eff Area of Support A2 (in^2)..... 1296.00  
 Plate Area A1 (in^2)..... 324.00  
 Sqrt(A2/A1)..... 2.00  
 Allowable Bearing Pressure (ksi) ..... 2.79  
 Actual Bearing Stress (ksi) ..... 1.39

DIAGRAM:



#	X(in)	Y(in)
1	6.000	6.000
2	6.000	-6.000
3	-6.000	-6.000
4	-6.000	6.000

PL 18.00 X 18.00 X 1.75 (in)  
 4 - 1 1/2" Other Anchor Bolts

CRITERIA:

Analysis

Maintain Strain Compatibility  
 Use full plate area for axial only compression load on plate.

Design

Use ASD 9th to check plate bending  
 Max concrete bearing per AISC J9.  
 Anchor Shear Check Per AISC Specifications.  
 Anchor Tension Check Per AISC Specifications.

INPUT DATA:

Column		
Column Size.....	HSS8.625X0.322	
Dim: TW Depth		
(in) 0.300 8.63		
Base Plate		
Plate Fy (ksi) .....	36.000	
N (Parallel to Web) (in).....	18.000	
B (Perpendicular to Web) (in).....	18.000	
Plate Thickness (in).....	1.250	
Anchor		
Anchor Size.....	1 1/2"	
Anchor Area (in^2).....	1.767	
Anchor Material.....	Other	
Anchor Modulus (ksi) .....	29000.00	
Anchor Strength Fu (ksi) .....	75.00	
Thread Included in Shear Plane		
Footing		
Footing Strength f'c (ksi) .....	3.00	
Concrete Modulus (ksi) .....	3122.02	
Dimension (Parallel to web) (ft).....	4.00	
Dimension (Perpendicular to web) (ft)...	4.00	
Design Load		
Building Code: - None -		
Load combination: Single Load Case		
Axial (kip).....	2.50	
Vx (kip).....	2.00	
Mx (kip-ft).....	32.40	
Allowable Stress Increase Factor .....	1.33	

RESULTS:

Analysis

YBar (in) ..... 5.98  
 Resultant Angle (°)..... 0.00

Plate Bending

Max bending moment from anchor/s #3 in tension  
 Allowable Stress Increase Factor ..... 1.33  
 m [N-0.95d]/2.0 (in)..... 5.550  
 n [B-0.95b]/2.0 (in)..... 5.550  
 Controlling effective width to resist moment (in) ... 5.100  
 Controlling plate bending moment (kip-ft) ..... 3.03  
 fb (ksi) ..... 27.41  
 Fb (ksi) ..... 35.91  
 fb/Fb ..... 0.76  
 Thickness Required (in)..... 1.092  
 Thickness controlled by cantilever action.

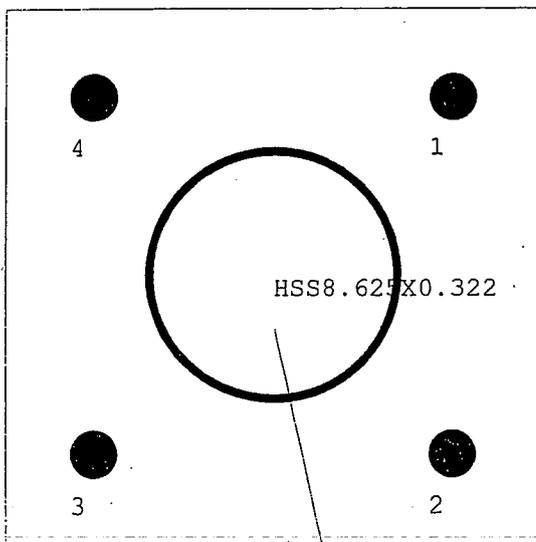
Anchors

Anchor	X(in)	Y(in)	V(kip )	T(kip )	Interaction
1	6.00	6.00	0.50	0.00	0.02
2	6.00	-6.00	0.50	0.00	0.02
3	-6.00	-6.00	0.50	14.27	0.25
4	-6.00	6.00	0.50	14.27	0.25

Bearing

Eff Area of Support A2 (in^2)..... 1296.00  
 Plate Area A1 (in^2)..... 324.00  
 Sqrt(A2/A1)..... 2.00  
 Allowable Bearing Pressure (ksi) ..... 2.79  
 Actual Bearing Stress (ksi) ..... 0.58

DIAGRAM:



#	X(in)	Y(in)
1	6.000	6.000
2	6.000	-6.000
3	-6.000	-6.000
4	-6.000	6.000

PL 18.00 X 18.00 X 1.25 (in)  
 4 - 1 1/2" Other Anchor Bolts

PROJECT: MODOT DMS SUPPORT

CLIENT: Hutt Fab

BY: EE

DATE: 4/25/07

W.O.# 07059

CHECK: \_\_\_\_\_

DATE: \_\_\_\_\_

SHEET 12 OF \_\_\_\_\_

SIGN SIZE 21' x 6.75'

$$P_w = 51.9 \text{ psf}$$

$$V_{tot} = 51.9 \text{ psf} (21' \times 6.75') = 7357 \#$$

$$R = 7357 / 4 = 1839.2$$

$$W_t = 2150$$

$$V_{DL} = \frac{2150}{4} = 538 \#$$

$$f_t = 75 \text{ ksi} \quad f_v = 30$$

$$F_t = 0.3(75) = 22.5 \text{ ksi}$$

$$F_v = 0.18(75) = 13.5 \text{ ksi}$$

from Table 10.32.3B

$$A 325 - T_{allow} = 38 \text{ ksi}$$

$$V_{allow} = 19 \text{ ksi}$$

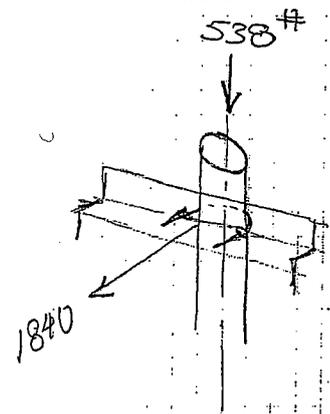
$$\frac{38}{105} = 0.36 F_u$$

$$\frac{19}{105} = 0.18 F_u$$

TRY  $\frac{5}{8}$ "  $\phi$  BOLT.  $A_b = 224$  (Tensile Area)

$$f_t = (1840/2) / 224 = 40.71$$

$$f_v = (538/2) / 224 = 1.300.88$$



A-193-B8 (304 SS.)

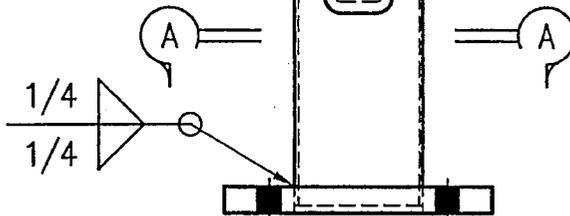
USE MIN  $\frac{5}{8}$ "  $\phi$  U-BOLT  
A-193-B8  
(304 SS OR EQUIV.)

INSTALL FORCE FIT  
END CAP AFTER  
GALVANIZING

8<sup>5</sup>/<sub>8</sub>" O.D. x .322 W  
PIPE FOR POSTS  
15'-0" AND UNDER

10<sup>3</sup>/<sub>4</sub>" O.D. x .365 W  
PIPE FOR POST  
OVER 15'-0"

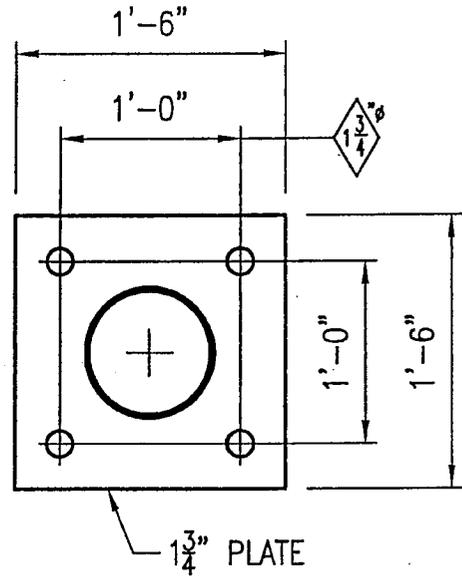
HANDHOLES & WIRE  
OUTLETS AS REQUIRED



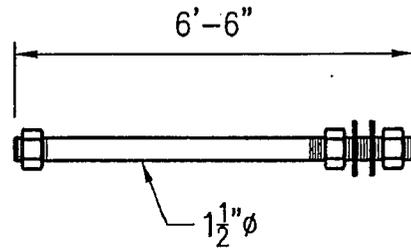
**DMS POST**  
2 PER SITE

PIPE - 42 KSI MIN YIELD  
PLATE - 36 KSI MIN YIELD  
ANCHOR BOLTS 55 KSI MIN YIELD

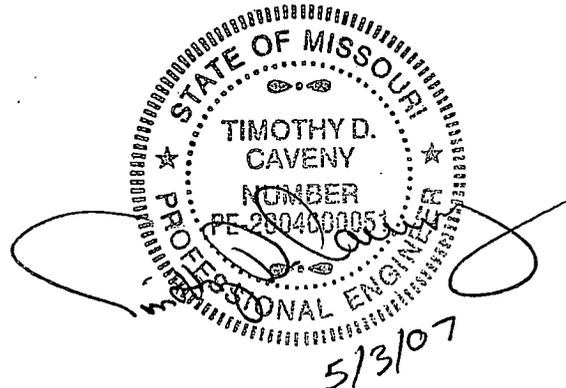
SHEET 1 OF 1



**SECTION A-A**



**ANCHOR BOLT**  
4 PER POST



MISSOURI DMS PROPOSAL  
JOB: J6Q2102

HURTT FABRICATING CORP.  
MARCELINE, MO

Joyce E Foster/SC/MODOT  
05/07/2008 08:42 AM

To Thomas E Allen/SC/MODOT@MODOT  
cc Brian A Williams/SC/MODOT@MODOT, Brian N  
Holt/D10/MODOT@MODOT, Bryan A  
Hartnagal/SC/MODOT@MODOT, Kevin K  
bcc

Subject Re: Fw: VECP's on DMS pipe posts

History: This message has been forwarded.

I have reviewed the VE proposal and it is my understanding that the VE proposal changed the post size from a 12 inch diameter steel post to an 8 inch diameter or 10 inch diameter steel post depending on the height of the steel post. In addition the proposed base of these steel posts was modified from ring stiffened base to a base that included no stiffeners.

No Standard Plans or Special Sheets have been developed for Dynamic Message Sign supports.

I have reviewed the Design Calculations that were provided by Cowell Engineering and the calculations appear to be incomplete. Because these dynamic message signs weigh over 2000 pounds and have a thickness of three to five feet, the steel posts and base plates cannot be designed using Design guides for thin and flat signs. Torsional loads, aerodynamic forces and deflections induced by wind must be carefully evaluated. Truck induced wind gusts and vortex shedding cause vibrations and fatigue and must be carefully evaluated. The connection method of attaching the DMS to the support structure is also important and must be addressed by the engineer. I could find no reference to any of these above mentioned important design requirements in Cowell Engineering's Design Calculations.

According to NCHRP Report 411 both Virginia and California have experienced failures of Dynamic Message Sign supports. We recommend that:

*The Dynamic Message Signs that have already been constructed using this value engineered design be carefully monitored by the district.*

*A detailed analysis be performed to determine the expected fatigue life of these Dynamic Message Sign supports and support structure. Within 3 to 6 months Bridge Office can perform a detailed analysis of these modified supports.*

*No more value engineering proposals be approved for this modified DMS supports until it is determined if these modified supports and connection method to support structure are designed to support the expected torsional loads, aerodynamic forces and fatigue.*

We have no record that this VE proposal was ever approved by the Bridge Division. The information I received on this value engineering proposal required approvals of the Resident Engineer, District Engineer & State Operations Engineer. Kent Nelson received an e-mail from the Resident Engineer on June 5th, 2007 stating that the VE had been approved. Shop drawings were submitted with a signed and sealed drawing from Hurtt Fabricating Corp of Marceline, MO. These shop drawings were reviewed to confirm that they did not differ from the signed and sealed drawing that was submitted with the shop drawings. No design review was performed by bridge office during the shop review process.

As stated below in December 2007, Bryan Hartnagal and the original designer from Parson's & Brinckerhoff reviewed the design calculations. At this time Parson's & Brinckerhoff had some concerns with Cowell Engineering's design computations and recommended that the original design be used and not the value engineered design.

If you have questions let me know.

Sincerely,

Joyce Foster, P.E.  
Structural Liaison Engineer  
(573) 751-3707

Thomas E Allen/SC/MODOT



Thomas E Allen/SC/MODOT

05/06/2008 09:12 AM

To Troy A Pinkerton/SC/MODOT@MODOT, Melissa A Wilbers/SC/MODOT@MODOT, Kevin K Steiner/D6/MODOT@MODOT, Brian A Williams/SC/MODOT@MODOT, Patrick L McDaniel/SC/MODOT@MODOT, Joyce E Foster/SC/MODOT@MODOT, Bryan A Hartnagel/SC/MODOT@MODOT  
cc Brian N Holt/D10/MODOT@MODOT

Subject Fw: VECP's on DMS pipe posts

I talked to Kevin Steiner this morning- the best we can piece together- the sequence of events for J6Q2102 is as follows:

- NTP was 5/16/07, the VECP was on 5/17/07
- someone in the construction office talked to Shirley E. about the VECP, the VECP seemed ok.
- Bridge fabrication section approved shop drawings in July '07
- all posts were installed by Aug 17th- the project had a 3 month timeframe. The installed posts were as per the VECP- 8" and 10" depending upon the DMS sign heights
- The actual DMS signs were Commission furnished by LedStar, Woodbridge, Ontario. The project completion time was extended because we could not get the DMS signs, the project was completed in Nov '07.
- I'm not sure what triggered this- but there is a note between Bryan H. and the consultant, Jamie Rana of PB, in Dec. '07 stating that we should stay w/ the original design.

So- I see two directions we can go:

- if in fact we should have stayed w/ the original design- then let's deny the VECP on the J0Q2151 and use the original design on J1Q2160

- But, we've already put 48 signs in, we are only doing 10 more on the next 2 projects, go ahead w/ the 8" and 10". Since the contractor has submitted a VECP on the d10 job, we probably need to share the VECP savings, but could we still change the D1 job, to capture all the savings for MoDOT?

To me, this needs need to be a joint decision between CM, TR & BR. I understand that CM has line authority approval. Help me ensure we have the correct facts and let's make a decision- D10 needs direction.

Tom

----- Forwarded by Thomas E Allen/SC/MODOT on 05/06/2008 08:23 AM -----

Thomas E Allen/SC/MODOT



05/05/2008 01:13 PM

To Troy A Pinkerton/SC/MODOT, Melissa A Wilbers/SC/MODOT, Kevin K Steiner/D6/MODOT, Brian A Williams/SC/MODOT, Patrick L McDaniel/SC/MODOT, Joyce E Foster/SC/MODOT, Bryan A Hartnagel/SC/MODOT



# MEMORANDUM

Missouri Department of Transportation  
Operations  
District 1

**TO:** Dave Ahlvers  
Brian A. Williams ✓

**FROM:** Troy Slagle TS  
Operations Engineer

**DATE:** May 5, 2008

**SUBJECT:** Value Engineering Proposal  
Contract I.D.: 080328-101  
Job No.: J1Q2160  
Route: I-29 & I-35  
County: Various Counties

RECEIVED  
MAY 07 2008  
Construction & Materials - ECR

Please find attached the Construction Value Engineering Proposal submitted by Leath & Sons, Inc. for the above project to Gina Orozco, Interim Resident Engineer in St. Joseph, Missouri.

I have reviewed the proposal and Gina's suggested comments and concur providing the supporting documentation asked for in my recommended approval is received. Please review and return with your recommendation and signature to the district office.

If more information is required for this proposal, please advise.

File



# MEMORANDUM

Missouri Department of Transportation  
St. Joseph Area Office  
District 1

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**TO:** Troy Slagle-1op

**FROM:** Gina Orozco *GO*  
Interim Resident Engineer

**DATE:** April 28, 2008

**SUBJECT:** Change Order Approval  
Contract ID 080328-101  
Job No: J1Q2160  
Route I-29 & I-35, Various County

Attached for your approval is the Value Engineering Proposal on the above mentioned contract. Please forward on to the next approval level.

# Leath & Sons, Inc.

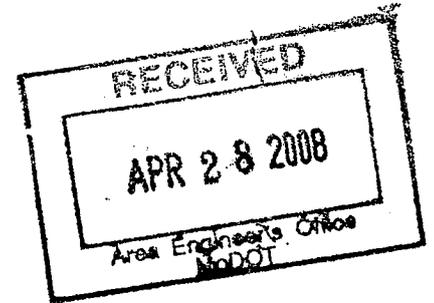
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9301 E. 63<sup>rd</sup> Street  
RAYTOWN, MO. 64133

(816) 353-8623  
FAX (816) 353-7011

April 25<sup>th</sup>, 2008

Attn: Kris Buczek  
Missouri Dept. of Transportation  
4718 S. 169 Highway  
St. Joeph, Mo 64507



RE: MHTD J1Q2160

Kris,

We are pleased to offer the following value engineering proposal. We feel this proposal will reduce project cost and decrease time required to complete the project.

Our proposal changes pipe sizes for the DMS posts from 12" Std to 8" Std and 10" Std pipe. Our proposal calls for constant diameter pipe and includes design calculations.

Please review this information and inform us of your decision of acceptability. Your prompt attention in this matter would be appreciated.

Sincerely,  
David Hoelzel, Project Manager  
Leath & Sons Inc.

# 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)

Contractor proposed to substitute 8" and 10" std pipe for the 12" as designed. This has previously been approved on other projects; however it is rejected based on analysis done by the Bridge Division.

## *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.

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