MEMORANDUM

TO: Steve Ehmann, County Executive

FROM: Bob Schnur, Director of Finance

DATE: March 31, 2020

RE: Change Order #1 – J.M. Marschuetz Construction
    RE: 19-132 Route 364 at Gutermuth Road Interchange

Attached please find Change Order #1 in the amount of $93,505.63, to the agreement with J.M. Marschuetz Construction for shoulder widening, manhole frame adjustment and temporary traffic barrier adjustments. This increases the total amount of the agreement to $5,243,815.22.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Original Contract</td>
<td>$ 5,150,309.59</td>
<td></td>
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<tr>
<td>Change Order #1</td>
<td>$ 93,505.63</td>
<td>[aggregate 1.81% increase]</td>
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</table>

Total contract change order(s) more is greater than $50,000 of the approved contract. This change order requires approval of the County Council per 135.430 OSCCMo.

The account number that will be charged for this purchase is 2059400-47601 project 75017.

Enclosure

km
MEMORANDUM

TO: Robert Schnur, Director of Finance
FROM: Craig Tajkowski, County Engineer
RE: Route 364 at Gutermuth Road Interchange Change Order #1
J.M. Marschuetz Construction
DATE: March 27, 2020

Original bid number and title: #19-132 Route 364 at Gutermuth Road Interchange

Original contract amount: $5,150,309.59 10/28/2019

Change order amount and number: $93,505.63 #1 March, 2020

Prior Change amounts and numbers: $

Revised contract value: $5,243,815.22

Attached please find Change Order #1 for the J.M. Marschuetz Company contract for work associated with the construction of the Route 364 at Gutermuth Road Interchange. This Change Order reflects the shoulder widening adjustments, manhole frame adjustments, temporary traffic barrier adjustments, Value Engineering Change Proposal for a retaining wall and traffic control adjustments. The revisions have been verified in the field by Highway Department Representatives.

After your review and approval, please forward to the County Counselor and the County Executive for inclusion on the April 13, 2020 Council Consent Agenda. Funds will come from Line Item #205-9400-47601-75017 (RT 364 @ GUTERMUTH RD INTERCHANGE). One copy of the Change Order has been signed by the Contractor and County Engineer and is enclosed. Thank you.

Enclosure

copy: Nathan Tormala, Construction Manager
Tim Riechers, Construction Engineer
# CHANGE ORDER

**CHANGE ORDER NO.:** 1  
**CHANGE ORDER LEVEL:** Level 2  
**COUNTY:** Saint Charles County  
**JOB NUMBER:** STP-732O(069)/J083350  
**PROJECT:** Route 364 at Gutermuth Road Interchange  

**TO:** J.M. Marschuetz Construction  
**CONTRACTOR**

YOU ARE HEREBY DIRECTED TO MAKE THE FOLLOWING CHANGES FROM THE CONTRACT.

### 1. DESCRIPTION AND REASON FOR CHANGE: (ATTACH SUPPLEMENTAL SHEETS IF REQUIRED)

### 2. ESTIMATED COST OF WORK AFFECTED BY THIS CHANGE ORDER:

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
<th>(F)</th>
<th>(G)</th>
<th>(H)</th>
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<td>4</td>
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<td>7</td>
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<td>402</td>
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<td>$1,200.00</td>
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<td>17</td>
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<td>14</td>
<td>$76.00</td>
<td>$1,050.00</td>
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<td><strong>TOTAL</strong></td>
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### 3. SETTLEMENT FOR COST OF THE ABOVE CHANGE TO BE MADE AT CONTRACT UNIT PRICES, EXCEPT AS NOTED:

1. CONTRACT AMOUNT: $5,150,309.59  
2. CHANGE THIS ORDER (H-I): $93,505.63  
3. CHANGE PREVIOUS: **$100,000.00**  
4. TOTAL CHANGE TO DATE (2+3): $93,505.63  
5. TOTAL: $5,243,815.22  
6. TOTAL 1% CHANGE TO DATE: 1.82%  

THE TERMS OF SETTLEMENT OUTLINED ABOVE ARE HEREBY AGREED TO:

**J.M. Marschuetz Construction**  
**CONTRACTOR**

BY: [Signature]  
DATE: 3/15/2020
CERTIFICATE OF DIRECTOR OF FINANCE

I certify pursuant to § 50.660 RSMo., as amended, that there is a balance otherwise unencumbered to the credit of the appropriation to which this contract is chargeable, and a cash balance otherwise unencumbered in the treasury to the credit of the fund from which payment is to be made, each sufficient to meet this obligation.

Robert W. Schnur, Director of Finance
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
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</table>
| 1 502-13.09 | 9" NRPCC  
(Overrun)  
In order to perform the ramp work for the interchange, the traffic on Route 364 will be shifted onto the inside shoulders, so barrier wall can be installed along the work zone. The shifting of the traffic, puts the wheel path on the existing inside rumble strip. The constant rumble of traffic will disturb nearby residences, and may startle motorist, so it was determined the rumble strips needed to be removed. This additional work will remove the existing pavement with the rumble strip, increase the 9" concrete pavement quantity, and reinstall the rumble strips at the completion of the project. An additional 6101 feet of 6" Yellow High Build Waterborne Pavement Marking Paint will also be added, since the inside edge pavement marking will need to be installed twice, to avoid two mobilizations of the rumble strip machine. Also see item numbers 620-59.03A, Cont. 02, Cont. 04, and Cont. 05. |
| 2 614-30.11 | Manhole Frame And Cover, Type 1-B  
(Overrun)  
The frame and covers for storm structures 36-3 MH, 36-2 MH, and 18-3 MH were changed from Type 1-B to Type 2, since the tops are located in pavement areas. Also see Item Number 614-30.12. |
| 3 614-30.12 | Manhole Frame And Cover, Type 2  
(Underrun)  
See Item Number 614.30.11 for explanation. |
| 4 616-10.05 | Construction Signs  
(Overrun)  
Additional Construction Signs are needed for the lane closures on Route 364. |
| 5 617-36.00D | Temporary Traffic Barrier Contractor Furnished/Retained  
(Overrun)  
The plans show the temporary traffic barrier wall on Gutermuth Road being anchored to the pavement. On typical arterial road projects, the County does not use anchored temporary barrier wall. This temporary traffic barrier wall has changed from anchored to unanchored. Also see Item Numbers 617-37.00B, 617-50.10A, and 617-50.11B |
| 6 617-37.00B | Temporary Traffic Barrier Anchored Contractor Furnished/Retained  
(Underrun)  
See Item Number 617-36.00D for explanation. |
| 7 617-50.10A | Relocating Temporary Traffic Barrier  
(Overrun)  
See Item Number 617-36.00D for explanation. |
| 8 617-50.11B | Relocating Temporary Traffic Barrier Anchored  
(Underrun)  
See Item Number 617-36.00D for explanation. |
| 9 620-59.03A | 6" Yellow High Build Waterborne Pavement Marking Paint  
(Overrun)  
See item number 502-13.09 for explanation. |
| 10 731-10.32 | Precast Concrete Drop Inlet 3 Ft X 2 Ft  
(Overrun)  
The length of Storm Structure 27-1 E was not included in the plan quantities. |
11 Cont. 01  
(Extra Work)  
**VE - Change MSE Wall to Redi-Rock Wall**  
The Contractor submitted a Value Engineering Proposal to switch the MSE Wall on Ramp 4 between STA 3+47 to 5+34 RT to a Redi-Rock Wall. The proposal was accepted by MoDOT and The County for a total savings of $18,300. According to MoDOT's Current Specification Section 104.6.3.2 the contractor will be paid 50 percent of the savings, so the total savings to the County will be $9,150.

12 Cont. 02  
(Extra Work)  
**Rumble Strip**  
See item number 502-13.09 for explanation. The settlement of costs will be paid at the agreed upon price of $1.66 per linear foot of rumble strip.

13 Cont. 03  
(Extra Work)  
**6" Temporary Bituminous Pavement**  
In traffic control Phase 1A the plans show the installation of temporary pavement being installed in both the North and South Roundabouts which will be used to maintain two way traffic in Phase 2. No bid item was setup for the installation of the temporary pavement. The settlement of costs will be paid at the agreed upon price of $48.00 per square yard of temporary pavement.

14 Cont. 04  
(Extra Work)  
**Existing Rumble Strip Pavement Removal**  
See item number 502-13.09 for explanation. The settlement of costs will be paid at the agreed upon price of $14,945 per lump sum for the removal of the existing rumble strip pavement.

15 Cont. 05  
(Extra Work)  
**Full Depth Sawcut**  
See item number 502-13.09 for explanation. The settlement of costs will be paid at the agreed upon price of $1.82 per linear foot for full depth saw cutting.

16 Cont. 06  
(Extra Work)  
**Arrow Board**  
An arrow board is needed for the lane closures on Route 364. The settlement of costs will be paid at the agreed upon price of $1,200.00 per each Arrow Board.

17 Cont. 07  
(Extra Work)  
**Directional Indicator Barricade**  
Directional Indicator Barricades are needed for the lane closures on Route 364. The settlement of costs will be paid at the agreed upon price of $75.00 per each Directional Indicator Barricade.
CONTINGENT ITEM PRICE CHECK

Project: Route 354 at Gutermuth Road Interchange

Job Number: STP-7302(669)/J6P3350  County: Saint Charles County

Item Description VE - Change MSE Wall to Redi-Rock Wall

Item Code  NA  Proposed Price/Unit  -$9,150 per Lump Sum
Line Number  Cont. 01  Units To Be Constructed  1 Lump Sum

MoDOT Unit Bid Price Book Comparison:

Year  Statewide Average Price
Other

Comparison With Prices On Other Area Projects:

Project  County
Job Number  Unit Price

Remarks:

Other Analysis/Considerations:
See attached Value Engineering Proposal.

Is the proposed price approved? Yes  By whom? TRR
Date approved/rejected  1/23/2020  Contractor notified? Yes
VALUE ENGINEERING CHANGE PROPOSAL
MISSOURI DEPARTMENT OF TRANSPORTATION

☐ Conceptual Proposal  ☑ Final Proposal  Date 1/9/2020
Contract ID STP-7302(699)
Job No. J6P3350
County St. Charles  Route 364
Contractor JM Marschuetz Construction
Designed By
VECP# (to be completed by C.O.)

Original Contract Amount $5,150,309.58
By JM Marschuetz Construction
Phone 636-938-3600

☐ VECP ☐ or PDVECP ☐

1. Description of existing requirements and proposed change(s). Advantages/Disadvantages
   Existing requirements include a MSB Wall per MODOT section 720. JM Marschuetz proposes an
   option to substitute Redirock material with a concrete footing and geo grid. The advantages to this
   would be a cost savings, thicker panel system, and decrease of maintenance for the future.

2. Estimate of reduction in construction costs. $18,300

3. Prediction of any effects the proposed change(s) will have on other department costs, such as
   maintenance and operations.
   JM Marschuetz predicts lower maintenance cost for future departments due to thicker concrete
   panel system

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.
   12/18/2019 (date and/or dates)
** Portion Below This Line To Be Filled Out by MoDOT **

Comments:

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<th>Approval</th>
<th>Recommended</th>
<th>District Engineer</th>
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Comments:

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<th>Federal Highway Administration Required for FHWA Full Oversight Projects</th>
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Comments:

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<th>Approval</th>
<th>State Construction and Materials Engineer</th>
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<th>Date</th>
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</table>

** Distribution:** Resident Engineer, Project Manager, District Construction & Materials Engineer, State Construction & Materials Engineer, FHWA Value Engineering Administrator – MoDOT, P. O. Box 270, Jefferson City, MO 65102
Riechers, Timothy

From: Riechers, Timothy
Sent: Thursday, January 23, 2020 12:50 PM
To: Andrew J
Cc: Roger Watson; Tormala, Nathan
Subject: FW: Gutermuth/364 VE Submittal
Attachments: Gutermuth VE (2).pdf

Andrew,

Attached is the approved Redi-Rock VE proposal for the Route 364 at Gutermuth Interchange Project.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: BETH J BITTICK <Beth.Bittick@modot.mo.gov>
Sent: Thursday, January 23, 2020 12:32 PM
To: Riechers, Timothy <TRiechers@sccmo.org>
Subject: FW: Gutermuth/364 VE Submittal

Approved and signed from the top 😊

From: RANDY C HITT
Sent: Thursday, January 23, 2020 8:51 AM
To: BETH J BITTICK
Cc: CYNTHIA R SIMMONS
Subject: RE: Gutermuth/364 VE Submittal

Beth, Here is your signed copy.

From: BETH J BITTICK
Sent: Wednesday, January 22, 2020 9:21 AM
To: RANDY C HITT
Cc: CYNTHIA R SIMMONS
Subject: Gutermuth/364 VE Submittal

Hi Randy – Hope all is well with you. I have attached a VE Submittal for the Gutermuth/364 project. Dawn has looked at it but does not need to sign. Please sign and return and let me know if you have any questions. Thanks!!!

Beth J Bittick
Beth,

Sorry for my delayed responses on your emails. I got your phone message too. I have had 2 deaths in my family in the last week, and I am trying to get caught up. I do have this project as a PODI, therefore do not need to sign/approve the VE.

But be aware as we have discussed before, I will want to go out and do a construction inspection sometime in the spring. I have been tasked with doing construction inspections on 4 LPA construction projects this year. DHP is already a PODI so that will be one of them, and I have already visited the Franklin County over Bourbeuse River project this last fall.

Thank you,
Dawn Perkins, P.E.
St. Louis Transportation Engineer
FHWA MO Division
3220 W. Edgewood, Suite H
Jefferson City, MO 65109
phone: 573-638-2626
fax: 573-638-9283
email: dawn.perkins@dot.gov

Hi Dawn – Hope all is well with you. I wasn’t sure if you wanted to review the attached VE submittal for the Gutermuth project but I thought I would let you decide. This submittal has been approved by our Area Team and Michele from Jeff City in Bridge. If you don’t need to sign just let me know and I will send to Randy Hitt for his signature. Thanks!!
From: Riechers, Timothy <Triechers@sccmo.org>
Sent: Thursday, January 9, 2020 2:07 PM
To: Andrew J <Andrew@marschuetz.com>
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>
Subject: RE: Route 364 and Gutermuth VE Option

Andrew,

Before I start forwarding this VE paperwork, can you please change where you state St. Charles County spec to MoDOT spec? MoDOT will probably take issue with that.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>
Sent: Thursday, January 09, 2020 1:53 PM
To: Riechers, Timothy <Triechers@sccmo.org>
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>
Subject: Route 364 and Gutermuth VE Option

CAUTION: This email originated from outside of St. Charles County Government. Always use CAUTION when opening attachments or clicking links from unknown senders or when receiving unexpected emails. - IS Dept.

Tim,

JM Marschuetz proposes a VE Option for the MSE Wall on the Route 364 and Gutermuth project. Please see attached paperwork.

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Andy,

The concrete leveling pad cannot be eliminated.

The inclusion of a levelling pad for MSE walls is a FHWA requirement that we have adopted (FHWA-NHI-10-024, page 5-6). Structural walls leveling pad should be constructed from lean unreinforced concrete. Gravel pads may be allowed only for non-structural walls such as those for landscaping purposes. Our specs allow for placement of the blocks/panels after the pad has cured a minimum of 12 hours which isn’t enough time to achieve full strength (per our specification block company can start placing block after 12 hours).

Thanks!

Michele Atkinson, P.E.
Structural Liaison Engineer
MoDOT – Bridge Division
Phone: 573-522-2371

From: ANDREW J TUERCK <Andrew.Tuerck@modot.mo.gov>
Sent: Monday, January 06, 2020 2:08 PM
To: Michele Atkinson <Michele.Atkinson@modot.mo.gov>; BETH J BITTICK <Beth.Bittick@modot.mo.gov>; Brandon L. Barke <Brandon.Barke@modot.mo.gov>
Cc: RANDALL S GLASER <Randall.Glaser@modot.mo.gov>; CYNTHIA R SIMMONS <Cynthia.Simmons@modot.mo.gov>; ROBERT J HAWKINS <Robert.Hawkins@modot.mo.gov>; JOHN C LEWIS <John.Lewis@modot.mo.gov>; CHRISTOPHER A KELLY <Christopher.Kelly@modot.mo.gov>; JASON M BALESTRERI <Jason.Balestreri@modot.mo.gov>
Subject: RE: Route 364 and Gutermuth: MSE Wall VE Option

Hi Michele,
One follow-up item on this from the contractor’s wall designer questioning the inclusion of a concrete leveling pad. See attached and please advise on response. Thanks!

Brandon is on leave, so Beth Bittick will shuttle the response back to the County.

Thanks!

Andy Tuerck, P.E.
Area Engineer, St. Charles County
Missouri Department of Transportation
6780 Old Highway N
St. Charles, MO 63304
All:

Thank you very much for responding so quickly with your feedback. I will pass along the comments to the County.

Have a good weekend!

Thanks,

Brandon

---

From: Michele Atkinson
Sent: Friday, December 20, 2019 10:48 AM
To: ANDREW J TUECK; ROBERT J HAWKINS; Brandon L. Barke
Cc: JOHN C LEWIS; CHRISTOPHER A KELLY; JASON M BALESTREI; RANDALL S GLASER; CYNTHIA R SIMMONS; BETH J BITTICK; Michele Atkinson
Subject: RE: Route 364 and Gutermuth: MSE Wall VE Option

All,

After talking to our MSE wall experts, the gravity wall is not something we would typically allow for this application. The Redi Rock wall with geogrid is currently on our approved product list for small block walls. However, this wall doesn’t meet the following requirements for small block walls:

720.3.2 Small block wall systems will be permitted for uses where the wall height does not exceed ten feet. This limit may be exceeded up to a maximum height of 12 feet to accommodate peaks in the wall or to accommodate lengths of the wall that do not exceed more than ten percent of the total wall length. The height of the wall will be determined by measuring from the top of the concrete leveling pad to the top of the cap on the wall.

After the internal discussion, I feel comfortable with this wall type if reinforced with geogrid...even though it is slightly outside of the spec requirements. I am not comfortable with using the gravity wall application though.

Thanks!

Michele Atkinson, P.E.
Structural Liaison Engineer
MoDOT – Bridge Division
Phone: 573-522-2371
From: ANDREW J TUECK <Andrew.Tuerck@modot.mo.gov>
Sent: Thursday, December 19, 2019 2:54 PM
To: ROBERT J HAWKINS <Robert.Hawkins@modot.mo.gov>; Michele Atkinson <Michele.Atkinson@modot.mo.gov>;
Brandon L. Barke <Brandon.Barke@modot.mo.gov>
Cc: JOHN C LEWIS <John.Lewis@modot.mo.gov>; CHRISTOPHER A KELLY <Christopher.Kelly@modot.mo.gov>; JASON M
BALESTRERI <Jason.Balestreri@modot.mo.gov>; RANDALL S GLASER <Randall.Glaser@modot.mo.gov>; CYNTHIA R
SIMMONS <Cynthia.Simmons@modot.mo.gov>; BETH J BITTICK <Beth.Bittick@modot.mo.gov>
Subject: RE: Route 364 and Gutermuth: MSE Wall VE Option

Michele - Good question. The county inspector used to work in MoDOT construction so I reached out to him for some
clarifications on the contractors intent. The contractor stated, that if they get MoDOT approval, they would get a
recommendation from the manufacturer on whether to go gravity or reinforced. Unless you know right off the bat that
we wouldn’t allow one option?

Bob – The wall along the ramp will not be accessible to vehicular traffic since it will run down below, holding up the ramp
embankment along the south side. It could possibly get hit with a mowing tractor I guess, but the blocks are 2400 lbs a
piece, so it seems pretty stout. I’m not the expert, but I wouldn’t anticipate really any regular maintenance or
inspection of this type of wall (187’ long x 11’ tall). Just my 2 cents. I’m not married to the idea, just due diligence =)

From: ROBERT J HAWKINS
Sent: Thursday, December 19, 2019 2:13 PM
To: ANDREW J TUECK; Michele Atkinson; Brandon L. Barke
Cc: JOHN C LEWIS; CHRISTOPHER A KELLY; JASON M BALESTRERI; RANDALL S GLASER; CYNTHIA R SIMMONS; BETH J
BITTICK
Subject: RE: Route 364 and Gutermuth: MSE Wall VE Option

Here are my thoughts:
Is the Redi-rock as structurally sound as a MSE wall?
I believe that bridge inspects MSE walls now, so how hard would this be to inspect?
If it’s hit, how easy is it to replace a section?
What is the cost difference between Redi-rock wall and an MSE wall?
Thanks

From: ANDREW J TUECK
Sent: Thursday, December 19, 2019 12:56 PM
To: Michele Atkinson; Brandon L. Barke
Cc: JOHN C LEWIS; ROBERT J HAWKINS; CHRISTOPHER A KELLY; JASON M BALESTRERI; RANDALL S GLASER;
CYNTHIA R SIMMONS; BETH J BITTICK
Subject: RE: Route 364 and Gutermuth: MSE Wall VE Option

Found this wall sheet after I sent initial email.

From: ANDREW J TUECK
Sent: Thursday, December 19, 2019 12:50 PM
To: Michele Atkinson; Brandon L. Barke
Cc: JOHN C LEWIS; ROBERT J HAWKINS; CHRISTOPHER A KELLY; JASON M BALESTRERI; RANDALL S GLASER;
CYNTHIA R SIMMONS; BETH J BITTICK
Subject: FW: Route 364 and Gutermuth: MSE Wall VE Option

Hi Michele,
You reviewed the other structural issue for this upcoming project, so the LPA folks would like your input on a VE proposal that the County's contractor put forward. Please advise on if they wall systems have been allowed on state system.

**My thoughts on the proposal to swap MSE wall for the Redi-rock wall on concrete footing:**

**Pros:** Wetcast, air-entrained concrete blocks with non-corrosive reinforcing grid
Out of the splash zone
Aesthetically pleasing
Obviously cost savings are always a plus, as long as it's not a detriment to the final product.

**Cons:** We just may not have experience with this specific wall system.

The team is trying to get these types of inquiries turned around fairly quickly if possible, but realize it could be tough during this holiday week coming up. Brandon Barke is the LPA construction representative that will be facilitating the comments that the team may have on the proposal.
Thanks!

Andy Tuerck, P.E.
Area Engineer, St. Charles County
Missouri Department of Transportation
6780 Old Highway N
St. Charles, MO 63304
(314)453-5046 (Office)
Andrew.Tuerck@modot.mo.gov  (MAX Email Size: 35MB)

From: Brandon L. Barke
Sent: Thursday, December 19, 2019 10:49 AM
To: ANDREW J TUERCK; JOHN C LEWIS; ROBERT J HAWKINS; CHRISTOPHER A KELLY; JASON M BALESTRERI
Cc: RANDALL S GLASER; CYNTHIA R SIMMONS; BETH J BITTICK
Subject: FW: Route 364 and Gutermuth: MSE Wall VE Option
Red-Rock retaining walls harness the power of gravity by using blocks weighing over one ton each. The modular aspect of the system allows gravity walls to be built much higher than other wall systems without using geogrid or tie-rods. Even taller reinforced retaining walls are possible with Red-Rock's Positive Connection System. Red-Rock products capture the "Essence of Natural Rock" with textures so natural, many mistake it for quarried stone.
Test Methods: ASTM D6638 & NCMA SRWU-1
Geogrid Type: Miragrid 5XT
Block Type: Positive Connection (PC) Block
Test Facility: Bathurst, Clarabut Geotechnical Testing, Inc.
Test Date: February 17, 2011

**CONNECTION STRENGTH TEST DATA**

<table>
<thead>
<tr>
<th>Test No.</th>
<th>Normal Load, lb/ft</th>
<th>Peak Connection, lb/ft</th>
<th>Observed Failure</th>
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<td>5,040</td>
<td>Rupture</td>
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<td>2</td>
<td>775</td>
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<td>3</td>
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<tr>
<td>8</td>
<td>3,911</td>
<td>4,444</td>
<td>Rupture</td>
</tr>
</tbody>
</table>

Peak Connection (average) = 4,863 lb/ft
Peak Connection (95% confidence level) = 4,680 lb/ft

**MIRAGRID 5XT CONNECTION STRENGTH**

![Graph showing connection strength data](image)

**CONNECTION DESIGN DATA**

<table>
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<th>Parameter</th>
<th>Equation</th>
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<td>$T_{ut}$</td>
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<tr>
<td>$T_{ultrom}$</td>
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<td>$T_{ult}$</td>
<td>5,334 lb/ft</td>
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<td>$T_{ult} / T_{ultrom}$</td>
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<tr>
<td>$T_{ult}$</td>
<td>0.84</td>
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<tr>
<td>$T_{CR}$</td>
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<td>2,201 lb/ft</td>
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<tr>
<td>$T_{CR}$</td>
<td>2,173 lb/ft</td>
</tr>
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---

(a) Tested with 3⁄4" clean crushed stone lightly compacted in the vertical core slot in accordance with Redi-Rock’s typical installation recommendations.
(b) Because the geogrid connection is not normal load dependent and an expression of peak connection force in design cannot be reliably determined through linear regression, the peak connection results are analyzed as continuous random variables. The average value or sample mean is reported for the test sample as well as a reduction factor as a reduction based upon a 95% confidence interval constructed from the Student’s T-test for n-1 degrees of freedom.
(c) Recommended $CR_{L}$ for design is based on a statistical best fit analysis of $T_{ult}$ / $T_{ultrom}$ values across all geogrid types tested.
(d) Recommended value for $5 < \phi_H < 8$. $RF_{RF}$ value of 1.3 recommended for $4.5 < \phi_H < 5$ and $8 < \phi_H < 8$.

The information contained in this report has been carefully compiled by Redi-Rock International, LLC as a recommendation of peak connection capacity. It is accurate to the best of our knowledge as of the date of its issue. However, final determination of the suitability of any design information and the appropriateness of this data for a given project is the sole responsibility of the user. No warranty of performance is expressed or implied by the publishing of the foregoing laboratory test results. Issue date: May 12, 2014.
REPORT

RESULTS OF
REDI-ROCK POSITIVE CONNECTION (PC) BLOCK
AND MIRAGRID 5XT
GEOGRID
CONNECTION CAPACITY TESTING

submitted to
REDI-ROCK INTERNATIONAL
CONFIDENTIAL

Distribution:
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Bathurst, Clarabut Geotechnical Testing, Inc. 17 February 2011
Telephone: (613) 384 6363 Email: petebcgta@kos.net

1 of 12
Redi-Rock Positive Connection (PC) Block

and Miragrid 5XT

Project # BCGT210050
Series BCGT3041

Introduction

This report gives the results of a connection testing program carried out to evaluate the mechanical/frictional performance of the connection between Redi-Rock Positive Connection (PC)™ Block modular concrete units manufactured by Redi-Rock International, LLC and Miragrid 5XT® geogrid.

The test program was initiated in response to a verbal authorization to proceed from Mr. Jack Bergmann of Redi-Rock International, LLC, received 20 December 2010.

The tests were carried out at the laboratories of Bathurst, Clarabut Geotechnical Testing, Inc. in Kingston, Ontario, under the supervision of Mr. Peter Clarabut.

Objectives of test program

The facing-geogrid connection between Redi-Rock concrete block units and Miragrid 5XT geogrid was investigated using a large-scale connection test apparatus.

The principal objective of the testing was to evaluate the frictional/mechanical performance of these connections. A second objective was to make preliminary recommendations for the selection of long-term tensile connection capacities to be used in the design and analysis of geogrid-reinforced soil wall systems that employ Redi-Rock blocks in combination with Miragrid 5XT® geogrid.

Materials

The Redi-Rock Positive Connection (PC) Block units used in this investigation are solid concrete blocks. The nominal dimensions of the blocks are 28 inches (toe to heel) by 18 inches high by 46 inches long and weigh approximately 1625 lb per unit. Construction alignment and wall batter is achieved by means of two dome-shaped concrete shear keys cast into the top surface of the units. The Redi-Rock block system employs a rectangular hole in the block to mechanically attach the geogrid reinforcement. The rectangular hole is centrally located across the block length and located 10 inches from the back of the block. The blocks used in this series of tests were supplied by Redi-Rock International and were received at our laboratory on 4 February 2010 and designated as BIC-10-007.

Miragrid 5XT is a coated bi-directional grid composed of 100% polyester multifilament yarn with a tensile strength of 4700 lb/ft in the machine direction (based on ASTM D 6637 method of test and reported on the manufacturers’ website - www.tencate.com on 2 February 2011). The geogrid specimens used in this series of testing were cut from roll/lot # 031119212/10121-1-1147 received at our laboratory on 24 June 2010. The index strength of roll/lot # 031119212/10121-1-1147 was 5334 lb/ft (test data supplied by TC Mirafi).

Apparatus and general test procedure

The method of test used in this investigation follows that reported by Bathurst and Simac (1993) and recommended by the NCMA (Simac et al. 1993) and ASTM D 6638. A brief de-
description of the apparatus and test methodology is presented here. The test apparatus used to perform the tests is illustrated in Figure 1. The test apparatus allows tensile loads of up to 35,000 pounds to be applied to the geogrid while it is confined between two block layers. The facing blocks were laterally restrained and surcharged vertically. A strip of geogrid reinforcement 12 inches wide (11 longitudinal strands) was passed through the block and both ends were attached to roller clamps. The connection detail and roller clamp arrangement is illustrated in Figure 2. A photograph of the Redi-Rock Positive Connection (PC) Block system and the recommended geogrid connection configuration is shown in Figure 3. The hollow slot portion of the block was infilled with a 3/4 inch, 100% crushed limestone aggregate and lightly compacted. Figure 4 illustrates the particle size distribution of the infill used in this test series. Two wire-line LVDT(s) were connected to the lower grid to measure grid displacement at the back of the block. Wall heights were simulated by placing one block over the interface and applying an additional surcharge load using the vertically-oriented hydraulic jack shown in Figure 1. Gum rubber mats were placed over the top block to ensure a uniform distribution of vertical surcharge pressure. The connection force was applied at a constant rate of displacement (i.e. 0.75 inch/minute) using a computer-controlled hydraulic actuator. The load and displacements measured by the actuator and the LVDT(s) were recorded continuously during the test by a microcomputer/data acquisition system. All blocks used in the tests were visually inspected to confirm that they were free of defects. Each test was continued until there was a sustained loss in connection load due to grid rupture. Following each test, the blocks were removed and the grid examined to confirm failure modes. A virgin specimen of grid was used for each test.

The only variable in this series of connection tests was the magnitude of surcharge load.

Test program

The surcharge loads used in the test program are given in Table 1. Also tabulated are the failure loads observed for each test.

Test results

A summary of tensile loads at peak capacity is given in Figure 5.

The peak connection capacity between Redi-Rock Positive Connection (PC) Block units and Miragrid 5XT for walls between 775 and 5165 lb/ft normal load, ranged between 81 and 94% of the index tensile strength of the specimen of Miragrid 5XT used in this investigation (5334 lb/ft - value reported by manufacturer for material used in this investigation).

Two repeat tests were performed and results in Figure 5 illustrate that there is variability in connection capacity between nominal identical tests. The variability is 8.4% and hence within the ± 10% of the mean peak load criterion required by the NCMA. This variability is likely the result of small differences in the setting up of the blocks and laying out of the geogrid reinforcement. The trend in data for peak connection loads has been plotted using a linear curve.
Redi-Rock Positive Connection (PC) Block and Miragrid 5XT

All tests ended in rupture of one or more longitudinal geogrid members. There was evidence of slippage of the grid within the concrete block-grid interface in all tests. Grid straining and slippage caused abrasion of longitudinal members and junction failure as the geogrid was pulled across the concrete surfaces.

Implications to Redi-Rock Positive Connection (PC) Block design and construction with Miragrid 5XT geogrid

The long-term design connection capacity in the field must be less than the peak capacity envelope determined in this test series for the same method and quality of construction. The NCMA Segmental Retaining Wall Design Manual (First Edition, 1993) recommends that the design connection capacity at a given surcharge load for a critical wall structure be the lesser of the peak capacity divided by a minimum factor of safety (not less than 1.5) or the capacity based on a 3/4 inch displacement criterion. The design curve in Figure 6 has been selected based on peak capacity load data only.

The design capacity envelope illustrated in Figure 6 should be used with caution. The actual design capacity envelope should be lower if the quality of construction in the field is less than that adopted in this controlled laboratory investigation and/or lower quality concrete is used in the manufacture of the blocks. For example, the interface concrete surfaces should be free of debris before placement of grid and blocks in order to minimize abrasion to the grid and to maximize the frictional resistance that is developed at the concrete block-grid interface.

It is very important that production blocks have uniform dimensions so that there is no stepping at the block joints that can lead to non-uniform frictional resistance at the block-grid interface, pinching of the grid at the block edges and possibly fracture of the concrete units.

Summary of conclusions

A laboratory testing program was carried out to evaluate the mechanical/frictional connection performance of Redi-Rock modular block facing units in combination with Miragrid 5XT. The following conclusions can be drawn:

1. The peak connection capacity between Redi-Rock Positive Connection (PC) Block units and Miragrid 5XT geogrid for walls between 775 and 5165 lb/ft normal load, ranged between 81 and 94% of the index tensile strength of the specimen of Miragrid 5XT used in this investigation (5334 lb/ft - value reported by manufacturer for material used in this investigation).

2. The trend in data for peak connection loads has been plotted using a linear curve. In addition, some variability in strength values was observed between nominal identical tests due to small differences in setting up of the blocks and laying out of the geogrid reinforcement.

3. Care must be taken during the installation of Redi-Rock Positive Connection (PC) Block units in order to prevent accumulation of soil and rock debris at the concrete block-grid
4. The design envelope in Figure 6 is based on an interpretation of test data as recommended in the NCMA Segmental Retaining Wall Design Manual (First Edition, 1993). The choice of design connection strengths may vary from site to site and quality of construction in the field may require lower design values than those taken from Figure 6.

R. J. Bathurst, Ph.D., P. Eng.

P. Clarabut

REFERENCES

ASTM D 6638-01. Standard Test Method for Determining Connection Strength between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks), American Society for Testing and Materials, West Conshohocken, PA 19428-2958 USA.


Bathurst, Clarabut Geotechnical Testing, Inc.
Table 1:
Test Program:
Redi-Rock Positive Connection (PC) Block unit - Miragrid 5XT polyester geogrid connection

<table>
<thead>
<tr>
<th>Test number</th>
<th>normal load (lb/ft)</th>
<th>peak horz. load (lb/block)</th>
<th>peak tensile capacity per single strip (lb/ft) (note 2)</th>
<th>observed failure mode</th>
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<td>1</td>
<td>2236</td>
<td>10080</td>
<td>5040</td>
<td>Rupture</td>
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<tr>
<td>2</td>
<td>775</td>
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<td>5165</td>
<td>8888</td>
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<td>4</td>
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<td>8888</td>
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</table>

Note: 1) The geogrid specimens used in this series of testing were cut from roll/lot # 031119212/10121-1-1147 received at our laboratory on 24 June 2010. The index strength of roll/lot # 031119212/10121-1-1147 was 5334 lb/ft (test data supplied by TC Mirafi).
2) The load recorded at the actuator is twice the value shown here.
**Figure 1:** Schematic of connection test apparatus showing Redi-Rock Positive Connection (PC) Block units and Mirafi geogrid

Bathurst, Clarabut Geotechnical Testing, Inc. 17 February 2011
Figure 2: Schematic of connection detail and clamp arrangement
Figure 3: Photograph of the Redi-Rock Positive Connection (PC) Block system and Miragrid 5XT geogrid
Figure 4: Particle size distribution for 100% crushed granular stone used in Redi-Rock Positive Connection (PC) Block tests
Redi-Rock / Miragrid 5XT
- peak

Figure 5: Connection capacity versus normal load for Redi-Rock Positive Connection (PC) Block with Miragrid 5XT based on a 12 inch wide strip of geogrid

Bathurst, Clarabut Geotechnical Testing, Inc.

Telephone: (613) 384-6363 Email: petebcggt@kos.net
Redi-Rock / Miragrid 5XT
- peak

Figure 6: Preliminary design capacity envelope for Redi-Rock Positive Connection (PC) Block units with Miragrid 5XT geogrid based on a 12 wide inch strip of geogrid
CONTINGENT ITEM PRICE CHECK

Project: Route 364 at Gutermuth Road Interchange

Job Number: STP-7302(669)J6P3350  County: Saint Charles County

Item Description: Rumble Strip

Item Code: NA  Proposed Price/Unit: $1.66 per Linear Foot

Line Number: Cont. 02  Units To Be Constructed: 8,101 Linear Feet

MoDOT Unit Bid Price Book Comparison:

Year:  Statewide Average Price:

Other:

Comparison With Prices On Other Area Projects:

Project:  County:

Job Number:  Unit Price:

Remarks:

Other Analysis/Considerations:
For MoDOT's St. Louis district the average 2018 unit price for rumble strip installation was $129.90 per STA. The high bid was $460 per STA.

Is the proposed price approved? Yes  By whom? TRR

Date approved/rejected: 2/10/2020  Contractor notified? Yes
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<th>PAY ITEM</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>AVERAGE QUANTITY</th>
<th># OF BIDS</th>
<th>AVERAGE PRICE</th>
<th>HIGH BID</th>
<th>LOW BID</th>
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Andrew,

The proposed unit price of $1.66 per linear foot for the installation of rumble strips has been approved, and will be added to the first change order.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

---

Tim,

Below is the price with no drip line for rumble strip. This removed $1800 from the price, which was the cost to do the drip line. Please note this price is contingent on one mobilization.

Rumble Strip: $10,156 at 6,100LF or $1.66/LF
This price includes the rumble strips, and 1 mobilization. If there is more than 1 mobilization it will be an extra $1,380 per mobilization.

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025
From: Riechers, Timothy <TRiechers@sccmo.org>
Sent: Monday, February 10, 2020 2:15 PM
To: Andrew J <Andrew@marschuetz.com>
Cc: Roger Watson <Rwatson@marschuetz.com>; Todd Wall <Todd@marschuetz.com>
Subject: RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

Andrew,

The sawcut and lane drop prices are also approved, and will be added to the first change order. I am still hoping for an adjustment to the rumble strip price, without the drip line. Once we get that ironed out, I will start processing Change Order 1.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>
Sent: Monday, February 10, 2020 2:10 PM
To: Riechers, Timothy <TRiechers@sccmo.org>
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>
Subject: RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

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Tim,

What about the price for sawcut, lane drop, and the rumble strips? These prices were stated back in the original email sent to you.

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025
Tim,

I spoke with the rumble strip contractor, in his opinion, it is necessary to have a drip line for accuracy purposes even if a sawcut is close.

In terms of a break down on the dig out, this will be plattin creeks work. I contacted them and they sent me over a break down with the following amounts.

Labor: $4248
Equipment: $2880
Haul: $13,032
Total: $20,160

The above price is for dig out assuming the added quantity of 6,101LF which would be 1017 SY.

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025

(O) 636-938-3600
(F) 636-938-7411
www.marschuetz.com
Andrew,

Can you provide a brake down of the Dig and Removal of Pavement price and check to see if the drip line is really needed. I question the need for a drip line since there will be a sawcut joint less than 2" from the rumble strip. They should be able to use the sawcut joint as the guide. If your rumble strip contractor agrees, please revise the submitted price.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>
Sent: Monday, February 03, 2020 4:22 PM
To: Riechers, Timothy <TRiechers@sccmo.org>
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwaston@marschuetz.com>
Subject: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

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Tim,

Per your request I have put together pricing for the Extra 1.5ft of Shoulder Work and also the rumble strip price.

Removal of Improvements (Assumes 1017 SY and 6100LF):
  Dig/Removal of Pavement: $20,160
  Sawcut: $11,102 at $1.82/LF (assuming 6100LF)
  Lane Drop: $1,600

Rumble Strip: $11,956 at 6,100LF or $1.96/LF
This price includes the rumble strips, drip line, and 1 mobilization. If there is more than 1 mobilization it will be an extra $1,380 per mobilization.

Thank you,

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025
Roger,

The County has some concerns about traffic driving on the inside rumble strips when traffic is shifted to the inside Route 364 shoulders. After some discussions with MoDOT, the county would like to sawcut and remove the existing rumble strip pavement along the inside Route 364 shoulders between STA 512+40 to 527+86 RT, STA 511+43 to 529+86 LT, STA 488+97 to 489+65 RT, STA 490+85 to 503+71 RT, STA 485+23 to 489+80 LT and STA 490+99 to 500+00 LT. Approximately 1.5 feet of additional pavement shall be replaced along with the 3 foot wide concrete shoulder.

We will use the existing contract unit price of $48.00/SY for 9" NRPC to cover the additional pavement cost. We will need to reinstall the rumble strips once traffic is switch back to the original configuration. Please submit a per linear foot unit price to install approximately 6101 linear feet of rumble strips. This unit price shall include all labor, equipment, and the cost of setting up and taking down the lane closures for the installation of the rumble strips.

Please let me know if you have any questions or concerns.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department
Riechers, Timothy

From: Brandon L. Barke <Brandon.Barke@modot.mo.gov>
Sent: Friday, December 20, 2019 2:52 PM
To: Riechers, Timothy; CYNTHIA R SIMMONS; BETH J BITTICK
Cc: Tormala, Nathan; Bostic, Chris
Subject: RE: Route 364 at Gutermuth Road Rumble Strips

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Tim,

After conversations on Monday with the area team, the proposed rumble strip solution is acceptable. MoDOT does not have an issue with narrowing the lanes while the pavement is curing, however we do not feel comfortable with lane widths narrower than 11’.

Let me know if you have any other questions. Have a good Christmas.

Brandon

From: TRiechers.sccmo.org
Sent: Tuesday, December 10, 2019 3:31 PM
To: CYNTHIA R SIMMONS; BETH J BITTICK
Cc: NTormala@sccmo.org; CBostic.sccmo.org; Brandon L. Barke
Subject: RE: Route 364 at Gutermuth Road Rumble Strips

Cindy,

The County has had some discussions with our contractor and internally about the rumble strips on Route 364 at Gutermuth, based on our phone conversation today.

Based on these conversations we are proposing to remove the existing rumble strips. This will remove of 1.5 feet of the existing concrete pavement along the inside Route 364 shoulders between STA 512+40 to 527+86 RT, STA 511+43 to 529+86 LT, STA 488+97 to 489+65 RT, STA 490+85 to 503+71 RT, STA 485+23 to 489+80 LT and STA 490+99 to 500+00 LT. We will have the contractor reinstall the removed 1.5 feet of concrete pavement with the 3’ wide concrete shoulder.

While this pavement is curing, the inside lanes of Route 364 maybe narrowed down to 10 to 10.5 feet wide. We can use narrow lane signs and changeable message boards to notify motorists. Then we will be able to shift traffic to the shoulders and start the ramp work.

Once traffic has switched back, we will have the contractor reinstall the rumble strips.

The additional concrete pavement will cost about $49,000, based on the contract unit prices. I will still need to ask the contractor for a unit price to reinstall the rumble strips, since we don’t have a bid item for that work. I would approximate about $5000, for the rumble strips. There might be some additional costs, we might be over looking at this time.
I have also attached an email from the contractor which includes their draft schedule, which is based on the NTP being issued next week. I just got it, so have not had a chance to review it myself.

Please let me know if MoDOT has any concerns with this proposal.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: CYNTHIA R SIMMONS <Cynthia.Simmons@modot.mo.gov>
Sent: Friday, December 06, 2019 8:47 AM
To: Riechers, Timothy <TRiechers@sccmo.org>; BETH J BITTICK <Beth.Bittick@modot.mo.gov>
Cc: Tormala, Nathan <NTormala@sccmo.org>; Bostic, Chris <CBostic@sccmo.org>; Brandon L. Barke <Brandon.Barke@modot.mo.gov>
Subject: RE: Route 364 at Gutermuth Road Rumble Strips

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Tim – Is there a time that you are available to discuss some options? Have you received any proposals from the contractor or your designer? Some considerations are a partial depth asphalt or concrete patch, filling the rumbles with an epoxy or polymer material then grinding out, complete pavement removal, or re-evaluate the placement of the barrier and shifted lane layout.

Thanks,

Cindy

Cynthia R Simmons, PE
Local Programs Construction Engineer
Missouri Department of Transportation
Cynthia.Simmons@modot.mo.gov
314.453.1833

From: TRiechers.sccmo.org
Sent: Thursday, December 05, 2019 3:18 PM
To: BETH J BITTICK
Cc: NTormala@sccmo.org; CBostic@sccmo.org; CYNTHIA R SIMMONS
Subject: Route 364 at Gutermuth Road Rumble Strips

Beth,

When we shift the Route 364 traffic onto the proposed inside shoulder, so we can perform the Gutermuth ramp work, traffic will be running on the existing inside rumble strips. Does MoDOT have a typical way to handle the rumble strips in this situation? With residents in close proximity to the highway, I don’t think they will appreciate the constant noise of traffic driving on the rumble strips. Apparently this was discussed in the design meetings, but MoDOT suggested not
to touch them. I would like to avoid switching traffic, getting resident complaints, and then trying to scramble to fill the rumble strips under traffic.

Thank you,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department
CONTINGENT ITEM PRICE CHECK

Project: Route 364 at Gutermuth Road Interchange

Job Number: STP-7302(569)/J6P3350 | County: Saint Charles County

Item Description: 6" Temporary Bituminous Pavement

Item Code: NA | Proposed Price/Unit: $48.00 per Square Yard
Line Number: Cont. 03 | Units To Be Constructed: 402 Square Yards

MoDOT Unit Bid Price Book Comparison:

Year: 2018 | Statewide Average Price: $51.09 per SY

Other

Comparison With Prices On Other Area Projects:

Project | County
Job Number | Unit Price

Remarks:

Other Analysis/Considerations:
MoDOT's 2018 average unit bid price to install 5 3/4 inches of Bituminous Pavement was $51.09 per Square Yard with an average quantity of 383.31 Square Yards.

Is the proposed price approved? Yes
By whom? TRR
Date approved/rejected: 1/29/2020
Contractor notified? Yes
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</table>
Tim,

Our price to install and remove temporary bituminous pavement is $48.00 Per SY for approximately 402 SY of temporary bituminous pavement.

Thank you,

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025

(O) 636-938-3600
(F) 636-938-7411
www.marschuetz.com

Roger,

Just wanted to check to if you were able to come up with a unit price for the temporary pavement.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department
From: Riechers, Timothy
Sent: Thursday, January 02, 2020 11:50 AM
To: Roger Watson <Rwatson@marschuetz.com>
Cc: Andrew J <Andrew@marschuetz.com>; Tormala, Nathan <NTormala@sccmo.org>
Subject: Route 364 and Gutermuth Temporary Pavement

Roger,

According to the Temporary Traffic Control plan sheets we will need to install temporary pavement inside the roundabouts on Gutermuth Road. No pay items were setup for the temporary pavement. Please submit a unit price per square yard to install and remove approximately 402 Square Yards of 6” Temporary Bituminous Pavement.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department
**CONTINGENT ITEM PRICE CHECK**

<table>
<thead>
<tr>
<th>Project:</th>
<th>Route 364 at Gutermuth Road Interchange</th>
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<tbody>
<tr>
<td>Job Number:</td>
<td>STP-7302(669)/J6P3350</td>
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<tr>
<td>County:</td>
<td>Saint Charles County</td>
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<tr>
<td>Item Description:</td>
<td>Existing Rumble Strip Pavement Removal</td>
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<tr>
<td>Line Number:</td>
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<td>Proposed Price/Unit:</td>
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<td>Units To Be Constructed</td>
<td>1 Lump Sum</td>
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**MoDOT Unit Bid Price Book Comparison:**

- Year: 
- Other: 

**Comparison With Prices On Other Area Projects:**

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<th>County:</th>
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<tbody>
<tr>
<td>Job Number:</td>
<td>Unit Price</td>
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**Remarks:**

- Other Analysis/Considerations:
- See attached Engineer's Estimate

Contractor Proposed $13,345 for Rumble Strip Pavement Removal and $1,600 for Traffic Control, which equals $14,945

<table>
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<th>Is the proposed price approved?</th>
<th>Yes</th>
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<tr>
<td>By whom?</td>
<td>TRR</td>
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<tr>
<td>Date approved/rejected</td>
<td>2/10/2020</td>
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<td>Contractor notified?</td>
<td>Yes</td>
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# Engineer's Independent Cost Estimate

**Project:** Route 364 at Gutermuth Road Interchange  
**Item:** Existing Rumble Strip Pavement Removal  
**Calculated by:** Tim Riechers

<table>
<thead>
<tr>
<th>Labor</th>
<th>Quantity</th>
<th>Units</th>
<th>Unit Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Operator (6 hours EB &amp; 6 Hours WB)</td>
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<td>Hrs</td>
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<td>$1,481.28</td>
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<tr>
<td>2 Laborers (Traffic Control: 3 hours setup, 3 hours removal, for 2 days)</td>
<td>24</td>
<td>Hrs</td>
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<td>Teamsters (40 Loads at 1.5 hours per load)</td>
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<td>Hrs</td>
<td>$43.63</td>
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<table>
<thead>
<tr>
<th>Equipment</th>
<th>Quantity</th>
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</thead>
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<td>Excavator (6 hours EB &amp; 6 Hours WB)</td>
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<td>Hrs</td>
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<td>Breaker (6 hours EB &amp; 6 Hours WB)</td>
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<tr>
<td>Dump Truck (40 Loads at 1.5 hours per load)</td>
<td>60</td>
<td>Hrs</td>
<td>$50.00</td>
<td>$3,000.00</td>
</tr>
</tbody>
</table>

| Labor | | | | |
|-------|----------------|----------|----------------|
| Sub Total | $5,237.88 | $1309.47 | $6,547.35 |
| Insurance and Taxes (assume 25%) | $1,309.47 | | $7,856.82 |
| Overhead and Profit (20%) | | | |
| Sub Total | $5,520.00 | | $6,624.00 |
| Overhead and Profit (20%) | $1,104.00 | | |

<table>
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<th>Prime Contractor Overhead</th>
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<tr>
<td>Sub Total</td>
<td>$14,480.82</td>
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<tr>
<td>Overhead (5%)</td>
<td>$724.04</td>
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</tbody>
</table>

| Total | $15,204.86 Per Lump Sum |
From: Riechers, Timothy
Sent: Monday, February 10, 2020 2:15 PM
To: Andrew J
Cc: Roger Watson; todd@marschuetz.com
Subject: RE: Route 364 and Guttermuth Extra Shoulder and Rumble Strip Price

Andrew,

The sawcut and lane drop prices are also approved, and will be added to the first change order. I am still hoping for an adjustment to the rumble strip price, without the drip line. Once we get that ironed out, I will start processing Change Order 1.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>
Sent: Monday, February 10, 2020 2:10 PM
To: Riechers, Timothy <Triechers@sccmo.org>
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>
Subject: RE: Route 364 and Guttermuth Extra Shoulder and Rumble Strip Price

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Tim,

What about the price for sawcut, lane drop, and the rumble strips? These prices were stated back in the original email sent to you.

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025
Andrew,

The County accepts the proposed unit price of $13,345 for the removal of the rumble strip pavement. This will be added to the first change order.

Thanks,

Tim Riechers, PE, CPESC  
Highway Construction Engineer  
St. Charles County Highway Department

---

Tim,

Here is the revised price from Plattin Creek. With profit of 5%, per the spec, this would make the price $13,345 for the dig out of the quantities assumed (1017SY).

Plattin Creek said, “Attached is a revised breakdown as requested. I adjusted the trucking hours but not quite to Tim’s numbers. I figured 6 cy per truck since it is broken concrete and there will be plenty of void space per truck.”

This is our final proposal and what it will take to complete the work that St. Charles County has requested.
### Labor

<table>
<thead>
<tr>
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<th>Date</th>
<th>Employee</th>
<th>Trade</th>
<th>Hours</th>
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<th>Total</th>
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<tbody>
<tr>
<td></td>
<td></td>
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<td>Laborer</td>
<td>24</td>
<td>$57.20</td>
<td>$1,372.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Operator</td>
<td>24</td>
<td>$71.02</td>
<td>$1,704.48</td>
</tr>
</tbody>
</table>

**Total Labor:** 48 hours $3,077.28

### Equipment

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<td>$1,692.00</td>
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<td>#053</td>
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**Total Materials:** 32 hours $2,092.00

### Materials

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**Total Materials**

### Subcontractors

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**Total Subcontractors** $6,390.00

**Sub Total** $11,559.28

**Overhead & Profit** 18.00% $1,150.20

**Total for This Request** $12,709.48
From: Riechers, Timothy <TRiechers@sccmo.org>
Sent: Monday, February 10, 2020 8:15 AM
To: Andrew J <Andrew@marschuetz.com>
Cc: Roger Watson <RWatson@marschuetz.com>; Tormala, Nathan <NTormala@sccmo.org>
Subject: RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

Andrew,

The County does not feel like a drip line is necessary for installation of the rumble strips with sawcut joint 2” away from the rumble strip location. On Salt River Road the contractor was able to install the rumble strip with out a drip line and that joint was about 4” away. See attached picture.

As for Plattin Creek’s estimate, I agree with the laborer and equipment rates, but the hauling and equipment float is where I am having a hard time justifying the costs. The cost of the equipment float should not be apart of the this change order work, since it should be already apart of the asphalt shoulder removal. For the Hauling, I calculate their should be about 35 dump truck loads to remove all of the rumble strip pavement. Google maps shows the round trip time from Route 364 to Gutermuth being about 20 minutes. So figuring a total of 1.5 hours per load for loading, dumping, and travel time there should only be about 52 hours of hauling added for this additional work. So I estimate a cost of about $5000.

One other thing is MoDOT Spec Section 109.5.6, only allows a 5% markup for administration and overhead costs for subcontract work.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>
Sent: Friday, February 07, 2020 1:54 PM
To: Riechers, Timothy <TRiechers@sccmo.org>
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <RWatson@marschuetz.com>
Subject: RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

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Tim,

Attached is the breakdown of the pricing for the dig out. Then we added 15% for overhead and 5% profit, this is where the $20,160 comes from for dig out.

See attachment

Andrew Jehle  
Project Manager  
J.M. Marschuetz Construction Co.  
15 Truitt Drive  
Eureka, MO 63025

(O) 636-938-3600  
(F) 636-938-7411  
www.marschuetz.com

From: Riechers, Timothy <TRiechers@sccmo.org>  
Sent: Friday, February 7, 2020 11:44 AM  
To: Andrew J <Andrew@marschuetz.com>  
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>; Tormala, Nathan <Ntormala@sccmo.org>  
Subject: RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

Andrew,

I will need a further breakdown of Platlin Creeks Labor, Equipment, and Hauling numbers.

Tim Riechers, PE, CPESC  
Highway Construction Engineer  
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>  
Sent: Friday, February 07, 2020 11:18 AM  
To: Riechers, Timothy <TRiechers@sccmo.org>  
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>  
Subject: RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

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I spoke with the rumble strip contractor, in his opinion, it is necessary to have a drip line for accuracy purposes even if a sawcut is close.

In terms of a break down on the dig out, this will be plattin creeks work. I contacted them and they sent me over a break down with the following amounts.

Labor: $4248  
Equipment: $2880  
Haul: $13,032  
Total: $20,160

The above price is for dig out assuming the added quantity of 6,101LF which would be 1017 SY.

Andrew Jehle  
Project Manager  
**J.M. Marschuetz Construction Co.**  
15 Truitt Drive  
Eureka, MO 63025

(0) 636-938-3600  
(F) 636-938-7411  
www.marschuetz.com

---

**From:** Riechers, Timothy  
**Sent:** Tuesday, February 4, 2020 8:39 AM  
**To:** Andrew J <Andrew@marschuetz.com>  
**Cc:** Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>; Tormala, Nathan <NTormala@sccmo.org>  
**Subject:** RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

Andrew,

Can you provide a brake down of the Dig and Removal of Pavement price and check to see if the drip line is really needed. I question the need for a drip line since there will be a sawcut joint less than 2" from the rumble strip. They should be able to use the sawcut joint as the guide. If your rumble strip contractor agrees, please revise the submitted price.

Thanks,

Tim Riechers, PE, CPESC  
Highway Construction Engineer  
St. Charles County Highway Department
Tim,

Per your request I have put together pricing for the Extra 1.5ft of Shoulder Work and also the rumble strip price.

Removal of Improvements (Assumes 1017 SY and 6100LF):
  Dig/Removal of Pavement: $20,160
  Sawcut: $11,102 at $1.82/LF (assuming 6100LF)
  Lane Drop: $1,600

Rumble Strip: $11,956 at 6,100LF or $1.96/LF
This price includes the rumble strips, drip line, and 1 mobilization. If there is more than 1 mobilization it will be an extra $1,380 per mobilization.

Thank you,

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025

(O) 636-938-3600
(F) 636-938-7411
www.marschuetz.com
<table>
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<tr>
<th>WO #</th>
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<td>Total Subcontractors</td>
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</table>

**Sub Total** | $14,609.28 |

**Overhead & Profit** | 15.00% | $2,191.39 |

**Total for This Request** | $16,800.67 |
Roger,

The County has some concerns about traffic driving on the inside rumble strips when traffic is shifted to the inside Route 364 shoulders. After some discussions with MoDOT, the county would like to sawcut and remove the existing rumble strip pavement along the inside Route 364 shoulders between STA 512+40 to 527+86 RT, STA 511+43 to 529+86 LT, STA 488+97 to 489+65 RT, STA 490+85 to 503+71 RT, STA 485+23 to 489+80 LT and STA 490+99 to 500+00 LT. Approximately 1.5 feet of additional pavement shall be replaced along with the 3 foot wide concrete shoulder.

We will use the existing contract unit price of $48.00/SY for 9” NRPCC to cover the additional pavement cost. We will need to reinstall the rumble strips once traffic is switch back to the original configuration. Please submit a per linear foot unit price to install approximately 6101 linear feet of rumble strips. This unit price shall include all labor, equipment, and the cost of setting up and taking down the lane closures for the installation of the rumble strips.

Please let me know if you have any questions or concerns.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

St. Charles County
Tim,

After conversations on Monday with the area team, the proposed rumble strip solution is acceptable. MoDOT does not have an issue with narrowing the lanes while the pavement is curing, however we do not feel comfortable with lane widths narrower than 11’.

Let me know if you have any other questions. Have a good Christmas.

Brandon

Cindy,

The County has had some discussions with our contractor and internally about the rumble strips on Route 364 at Gutermuth, based on our phone conversation today.

Based on these conversations we are proposing to remove the existing rumble strips. This will remove of 1.5 feet of the existing concrete pavement along the inside Route 364 shoulders between STA 512+40 to 527+86 RT, STA 511+43 to 529+86 LT, STA 488+97 to 489+65 RT, STA 490+85 to 503+71 RT, STA 485+23 to 489+80 LT and STA 490+99 to 500+00 LT. We will have the contractor reinstall the removed 1.5 feet of concrete pavement with the 3’ wide concrete shoulder.

While this pavement is curing, the inside lanes of Route 364 maybe narrowed down to 10 to 10.5 feet wide. We can use narrow lane signs and changeable message boards to notify motorists. Then we will be able to shift traffic to the shoulders and start the ramp work.

Once traffic has switched back, we will have the contractor reinstall the rumble strips.

The additional concrete pavement will cost about $49,000, based on the contract unit prices. I will still need to ask the contractor for a unit price to reinstall the rumble strips, since we don’t have a bid item for that work. I would approximate about $5000, for the rumble strips. There might be some additional costs, we might be over looking at this time.
I have also attached an email from the contractor which includes their draft schedule, which is based on the NTP being issued next week. I just got it, so have not had a chance to review it myself.

Please let me know if MoDOT has any concerns with this proposal.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: CYNTHIA R SIMMONS <Cynthia.Simmons@modot.mo.gov>
Sent: Friday, December 06, 2019 8:47 AM
To: Riechers, Timothy <TRiechers@sccmo.org>; BETH J BITTICK <Beth.Bittick@modot.mo.gov>
Cc: Tormala, Nathan <NTormala@sccmo.org>; Bostic, Chris <CBostic@sccmo.org>; Brandon L. Barke <Brandon.Barke@modot.mo.gov>
Subject: RE: Route 364 at Gutermuth Road Rumble Strips

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Tim – Is there a time that you are available to discuss some options? Have you received any proposals from the contractor or your designer? Some considerations are a partial depth asphalt or concrete patch, filling the rumbles with an epoxy or polymer material then grinding out, complete pavement removal, or re-evaluate the placement of the barrier and shifted lane layout.

Thanks,
Cindy

Cynthia R Simmons, PE
Local Programs Construction Engineer
Missouri Department of Transportation
Cynthia.Simmons@modot.mo.gov
314.453.1833

From: TRiechers.sccmo.org
Sent: Thursday, December 05, 2019 3:18 PM
To: BETH J BITTICK
Cc: NTormala@sccmo.org; CBostic.sccmo.org; CYNTHIA R SIMMONS
Subject: Route 364 at Gutermuth Road Rumble Strips

Beth,

When we shift the Route 364 traffic onto the proposed inside shoulder, so we can perform the Gutermuth ramp work, traffic will be running on the existing inside rumble strips. Does MoDOT have a typical way to handle the rumble strips in this situation? With residents in close proximity to the highway, I don’t think they will appreciate the constant noise of traffic driving on the rumble strips. Apparently this was discussed in the design meetings, but MoDOT suggested not
to touch them. I would like to avoid switching traffic, getting resident complaints, and then trying to scramble to fill the rumble strips under traffic.

Thank you,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department
# Contingent Item Price Check

**Project:** Route 364 at Gutermuth Road Interchange  
**Job Number:** STP-7302(669)/J6P3350  
**County:** Saint Charles County

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Proposed Price/Unit</th>
<th>Units To Be Constructed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Depth Sawcut</td>
<td>$1.82 per Linear Foot</td>
<td>6,101 Linear Foot</td>
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</table>

**MoDOT Unit Bid Price Book Comparison:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Statewide Average Price</th>
</tr>
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<tr>
<td></td>
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**Comparison With Prices On Other Area Projects:**

<table>
<thead>
<tr>
<th>Project</th>
<th>County</th>
<th>Job Number</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>South River Road</td>
<td>St. Charles</td>
<td>STP-5414(630)</td>
<td>$2.30 per Linear Foot</td>
</tr>
</tbody>
</table>

Remarks: Sawcut quantity on South River Road was 5,376 linear feet.

**Other Analysis/Considerations:**

Is the proposed price approved? Yes  
By whom? TRR  
Date approved/rejected 2/10/2020  
Contractor notified? Yes
Andrew,

The sawcut and lane drop prices are also approved, and will be added to the first change order. I am still hoping for an adjustment to the rumble strip price, without the drip line. Once we get that ironed out, I will start processing Change Order 1.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>
Sent: Monday, February 10, 2020 2:10 PM
To: Riechers, Timothy <TRiechers@sccmo.org>
Cc: Todd Wall <Todd@marschuetz.com>; Roger Watson <Rwatson@marschuetz.com>
Subject: RE: Route 364 and Gutermuth Extra Shoulder and Rumble Strip Price

CAUTION: This email originated from outside of St. Charles County Government. Always use CAUTION when opening attachments or clicking links from unknown senders or when receiving unexpected emails. - IS Dept.

Tim,

What about the price for sawcut, lane drop, and the rumble strips? These prices were stated back in the original email sent to you.

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025
Tim,

Per your request I have put together pricing for the Extra 1.5ft of Shoulder Work and also the rumble strip price.

Removal of Improvements (Assumes 1017 SY and 6100LF):
  Dig/Removal of Pavement: $20,160
  Sawcut: $11,102 at $1.82/LF (assuming 6100LF)
  Lane Drop: $1,600

Rumble Strip: $11,956 at 6,100LF or $1.96/LF
This price includes the rumble strips, drip line, and 1 mobilization. If there is more than 1 mobilization it will be an extra $1,380 per mobilization.

Thank you,

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025

(O) 636-938-3600
(F) 636-938-7411
www.marschuetz.com
**CONTINGENT ITEM PRICE CHECK**

**Project:** Route 364 at Gutermuth Road Interchange

**Job Number:** STP-7302(669)/J6P3350  
**County:** Saint Charles County

**Item Description:** Arrow Board

<table>
<thead>
<tr>
<th>Item Code</th>
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<th>Units To Be Constructed</th>
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</thead>
<tbody>
<tr>
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<td>$1200.00 per Each</td>
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**MoDOT Unit Bid Price Book Comparison:**

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**Comparison With Prices On Other Area Projects:**

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<th>Job Number</th>
<th>Unit Price</th>
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**Remarks:**

**Other Analysis/Considerations:**

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Is the proposed price approved? **Yes**  
By whom? **TRR**  
Date approved/rejected **3/12/2020**  
Contractor notified? **Yes**
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</tbody>
</table>
Andrew,

The proposed unit price of $1200.00 each for the Arrow Board has been approved and will be added to the first change order.

Please also submit a unit price per each for 14 Directional Indicator Barricades.

Thanks,

Tim Riechers

Sent from my iPhone

On Mar 11, 2020, at 8:41 AM, Andrew J <Andrew@marschuetz.com> wrote:

CAUTION: This email originated from outside of St. Charles County Government. Always use CAUTION when opening attachments or clicking links from unknown senders or when receiving unexpected emails. - IS Dept.

Tim,

One arrow board will be $1,200

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025

<image002.jpg>

(O) 636-938-3600
(F) 636-938-7411
www.marschuetz.com
Roger and Andrew,

Can you please submit a unit price for one arrow board to be used on the Route 364 at Gutermuth Project.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

<image003.png>
## CONTINGENT ITEM PRICE CHECK

<table>
<thead>
<tr>
<th>Project:</th>
<th>Route 364 at Gutermuth Road Interchange</th>
</tr>
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<tbody>
<tr>
<td>Job Number:</td>
<td>STP-7302(659)/J6P3350</td>
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<tr>
<td>County:</td>
<td>Saint Charles County</td>
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**Item Description:** Directional Indicator Barricade

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<th>Item Code</th>
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<tbody>
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<td>Line Number</td>
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<tr>
<td>Proposed Price/Unit</td>
<td>$75.00 per Each</td>
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<td>Units To Be Constructed</td>
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**MoDOT Unit Bid Price Book Comparison:**

<table>
<thead>
<tr>
<th>Year</th>
<th></th>
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<tbody>
<tr>
<td>Statewide Average Price</td>
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<td>Other</td>
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**Comparison With Prices On Other Area Projects:**

<table>
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<tr>
<th>Project</th>
<th>County</th>
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</thead>
<tbody>
<tr>
<td>Job Number</td>
<td>Unit Price</td>
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</table>

**Remarks:**

Other Analysis/Considerations:
The unit price on the project for a Type II ADA Barricade is $79.25 per each, which is a similar item to the Directional Indicator Barricade.

Is the proposed price approved? **Yes**

By whom? **TRR**

Date approved/rejected **3/13/2020**

Contractor notified? **Yes**
Riechers, Timothy

From: Riechers, Timothy
Sent: Friday, March 13, 2020 8:48 AM
To: Andrew J
Subject: RE: Route 364 at Gutermuth Arrow Board

Andrew,

The proposed unit price of $75.00 per each directional indicator barricades has been approved and will be added to the first change order.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

From: Andrew J <Andrew@marschuetz.com>
Sent: Friday, March 13, 2020 8:44 AM
To: Riechers, Timothy <TRiechers@sccmo.org>
Subject: Re: Route 364 at Gutermuth Arrow Board

CAUTION: This email originated from outside of St. Charles County Government. Always use CAUTION when opening attachments or clicking links from unknown senders or when receiving unexpected emails. - IS Dept.

Tim,

The proposed price for directional indicator barricades is $75/EA

-Andrew Jehle

Sent from my iPhone

On Mar 12, 2020, at 12:48 PM, Riechers, Timothy <TRiechers@sccmo.org> wrote:

Andrew,

The proposed unit price of $1200.00 er each Arrow Board has been approved and will be added to the first change order.

Please also submit a unit price per each for 14 Directional Indicator Barricades.

Thanks,
On Mar 11, 2020, at 8:41 AM, Andrew J <Andrew@marschuetz.com> wrote:

CAUTION: This email originated from outside of St. Charles County Government. Always use CAUTION when opening attachments or clicking links from unknown senders or when receiving unexpected emails. - IS Dept.

Tim,

One arrow board will be $1,200

Andrew Jehle
Project Manager
J.M. Marschuetz Construction Co.
15 Truitt Drive
Eureka, MO 63025

(O) 636-938-3600  
(F) 636-938-7411
www.marschuetz.com

From: Riechers, Timothy <TRiechers@sccmo.org>
Sent: Monday, March 9, 2020 8:59 AM
To: Roger Watson <Rwatson@marschuetz.com>; Andrew J <Andrew@marschuetz.com>
Subject: Route 364 at Gutermuth Arrow Board

Roger and Andrew,

Can you please submit a unit price for one arrow board to be used on the Route 364 at Gutermuth Project.

Thanks,

Tim Riechers, PE, CPESC
Highway Construction Engineer
St. Charles County Highway Department

<image003.png>