2009 APPLICATION FORM

(required for each entry)

Complete this section for (check one): ☐**Small Project** ☐**Large Project**

■**Post-Design Solution** ☐**Off System Project**

Job No. J8S0724, Bridge No. A7501 **Route** H (Glenstone Avenue) **County / LPA** Greene

Description (attach separate sheet if necessary): The project replaces the existing overpass bridges and reconstructs a standard diamond interchange at Glenstone Avenue and Interstate-44. In addition, Glenstone Avenue is being widened. As part of the project, a new bridge will be constructed over existing Interstate 44 and the existing bridges removed. The final bridge plans provided for a 4-span prestressed concrete I girder bridge. During the preliminary bridge design phase it was found this was the most economical solution. However, a 2 span prestressed concrete I girder bridge with MSE walls at the end bents was comparable to the cost of the 4-span structure. With this in mind, an Alternate Technical Concept (ATC) special provision was added to this project to allow Contractors to bid on an ATC for the overpass bridge if MoDOT approved the concept and the timeframe to redesign the bridge did not change the Contractor's ability to complete the project. Ultimately, two of the three bidders submitted an ATC for a 2 span Prestressed I girder bridge with Mechanically Stabilized Earth (MSE) walls at the end bents. The project was awarded on October 29, 2008 to the low bidder who was one of the Contractors with the bridge ATC. We have hired a Consultant to deliver the bridge portion of the ATC plans. District 8 will be completing the roadway part of these plans.

Project Leader Chad Zickefoose – d8

Key Team Members (include key personnel irrespective of employer-nine individuals maximum)

Ken Shamet - br Joyce Foster – br Ray Jansen – br Mike Harms – br Dennis Heckman - br

Project Budget:

Engineer's Bridge Estimate $2,610,980 **Final Bridge Award** $ 1,845,000

What would make this entry stand out from the rest of the entries when considering MoDOT's practical design philosophy? (In layman's terms - 200 words or fewer-attach separate sheet if necessary) Based on the approved ATC, it was estimated that the proposal would save $224,000 in construction costs. It will cost approximately $126,000 to redesign and reproduce the bridge and roadway plans. Therefore, the estimated net savings is approximately $98,000 for the bridge portion of the project. Inherently, we believe we received much better bids than anticipated for the bridge part of the project due to the competition created by allowing a bridge ATC. The awarded low bid was $1,845,000 for the bridge, which was approximately $766,000 under the final engineer's bridge estimate.

Send entries to: MoDOT Design Division, ATTN: Joe Jones
1320 Creek Trail Dr., Jefferson City, Missouri 65109

ALL ENTRIES MUST BE RECEIVED NO LATER THAN CLOSE OF BUSINESS ON DECEMBER 1, 2008

ATC Proposal

Call 801 - Rt. H - Greene Co.

*Bridge Alternate Technical Concept Proposal - **Revision No. 1** - Emery Sapp & Sons, Inc.*

Bridge A7501

This Alternate Technical Concept changes the original bridge design from a 4 span bridge with spill-fill slopes to a 2 span bridge with MSE walls at the abutments to retain the fill. The new end bent locations will be at original design locations for interior bents 2 and 4.

A. Original Designed Bridge Contract Requirements

Length =	276.52	ft
Spans =	4	each
Span Lengths =	53' - 84' - 84' - 53'	
Width =	88.67	ft

1. The bridge substructure has 2 end bents and 3 interior bents. The end bents consist of a 99.5 ft bearing beam / 13 ft wing on 10 - HP12x53 piling. The interior bents consist of a 96.67 ft cap beam supported on 6 - 30" concrete columns on 6' x 7' spread footings keyed into rock.

2. The bridge superstructure consists of a CIP concrete deck with partial use of precast deck panels and conventional forming on Type 6 (54") pre-stressed concrete I-girders.

3. The bridge has conventional Safety Barrier Curb allowing for either CIP or slipforming option.

4. An 8" raised median barrier will be constructed on deck with use of drilled resin anchors.

B. ATC Proposed Bridge

Length =	171	ft
Spans =	2	each
Span Lengths =	84' - 84'	
Width =	88.67	ft

Use MSE Wall at Abutments

1. The proposed substructure will consist of 2 end bents and 1 interior bent. The end bents will be the same dimensions but will need to be designed for heavier loads due to longer girder spans being placed on them. The one intermediate bent will be as originally designed in center of I-44 median.

2. The bridge will be shortened by the use of MSE walls at the new abutment locations. This proposal and it's estimated cost savings are based on placing the new end bents at original Bent 2 and 4 locations and building a MSE wall approximately 3 ft in front of the bearing beam.

3. The proposed superstructure will consist of the use of the originally designed pre-stressed concrete I-girders for Spans 2 and 3 using the same combination of precast deck panels and conventional forming.

4. Due to the shortening of the bridge length, additional concrete pavement, embankment in place and guardrail will be required and is included in the attached detailed estimate of cost savings.

5. All of the Minimum Requirements as specified in 2.0 - General Conditions will be met by this ATC proposal.

C. Estimated Cost Savings

The Cost Savings thru the use of this Alternate Technical Concept is approximately $ 224,000.

See the attached worksheet for a detailed breakdown of estimated cost savings. The worksheet lists the quantities of work that will be eliminated and the additional work that will be required.

D. Previous Submissions of this Alternate Technical Concept

Emery Sapp and Sons, Inc. has not previously submitted this Technical Concept.

We have built 2 projects for MoDOT where this concept was the original design provided in the bid documents.

E. Schedule Impact

We do not feel that the additional redesign of the bridge will impact the schedule if MoDOT begins the process immediately after award of the project.

F. Contact Information

If you have questions concerning this proposal, please contact the following person:

Russell Crane
Phone - 573-445-8331
Fax - 573-446-4805
rcrane@emerysapp.com

HTC Special Provision

2.0 When necessary for proper prosecution of work, each contractor shall permit the other access through the overlapping construction areas and the use of any access roads constructed by others.

DD. ALTERNATE TECHNICAL CONCEPTS FOR BRIDGE CONSTRUCTION STATION 138+73.77 TO STATION 141+50.29.

1.0 Description.

1.1 This specification allows bidders the opportunity to include in their overall bid proposal, pricing for a pre-approved concept, product or solution for the allowed alternate portion of the Commission furnished bid proposal. The bid documents will designate the portion or portions of the Commission furnished bid proposal that pre-approved alternate solutions will be considered applicable.

1.2 In Alternate Technical Concept bidding, the Commission expands the choices of designs, materials, concepts or solutions it is willing to accept, and includes the basis for the low bidder selection.

1.3 For this request for proposal, the bidder may submit a bid for the Commission furnished proposal, including the Commission furnished bridge solution or a bid that includes pricing for the pre-approved bridge alternate in addition to pricing for the various other items of work included in the contract.

2.0 General Conditions.

2.1 The proposal documents contain all of the proposed work for the project to be bid. The bidder may propose an alternate to the design of bridge number A7501 from station 138+73.77 to station 141+50.29. The minimum requirements for the finished project are listed below. If the alternate design meets the minimum requirements and is pre-approved by the Commission, the alternate technical concept may be submitted in the bidders proposal for consideration by the Commission in addition to any other items of work included in the contract solicitated for bid.

(a) Bridge Typical Section and Profile Grade Requirements – Minimum Requirements

- The roadway shall be a minimum width of 86 feet. The shoulders shall be a minimum width of 4 feet.
- Bridge No. A7501 shall be built in stages in accordance with plans.
- Provide approach slabs and a 4' raised median curb on bridge deck in accordance with plans.
- Spill slopes steeper than 2.5:1 must be designed and certified by a registered geologist.
- The profile grade for Route H, as shown on the plans, shall not be modified.
- A minimum vertical clearance of 15'-6" from crown of existing lanes and a minimum lateral clearance of 36' centered on existing lanes shall be maintained during construction.
- A final minimum vertical clearance of 16' – 6" shall be provided over I-44.
- The north side of the westbound lanes and the south side of the eastbound lanes shall provide a minimum horizontal clearance of 29'-8" perpendicular to centerline of roadway measured from edge of roadway.
- The minimum horizontal clearance perpendicular to centerline of roadway from the inside edge of roadway to substructure elements in the median shall be 18'-9".

(b) Bridge Design Specifications – Minimum Requirements

- Alternate bridge designs shall be in accordance with all state and federal regulations.
- Alternate bridge designs shall be in accordance with the 2007 AASHTO LRFD 4th Edition for Superstructure design, 2002 AASHTO 17th Edition for Substructure design, 1986 FHWA Report "Bridge Deck Drainage Guidelines" and MoDOT Engineering Policy Guide.
- Alternate bridge designs shall use the following loading requirements:
  (1) HL-93
  (2) 35 lb/sf future wearing surface
  (3) Earth 120 lb/cf, equivalent fluid pressure 45 lb/cf

(c) General Bridge Design Requirements – Minimum Requirements.

- Design life for the bridge shall be a minimum 75 years.
- Bridge approach slabs are required.
- A reinforced concrete overlay is required for prestressed voided slab or prestressed box girder superstructures.
- Conduit (3" dia.) shall be provided in barrier curbs on each side of bridge for future lighting.
- Intermediate pile cap bents will not be allowed.
- If drilled shafts are used side resistance values for rock socket design shall be those given in the following table or those certified by a registered geologist:

Bents as shown on plans	Elevation	Side Resistance (tsf)
2	1286 to 1260	4.5
3	1285 to 1260	4.5
4	1287 to 1260	4.5

- Draining water directly over the edge of the bridge (i.e. curb outlets) will not be allowed.
- Draining water directly onto the I-44 roadways and shoulders will not be allowed.

(d) General – Minimum Requirements

- Utility clearances shall be maintained.
- The alternate technical concept cannot delay the completion of the project in accordance with Job Special Provision AA. Liquidated Damages Specified.
- Traffic control shall be handled in accordance with plans.
- Alternate technical concepts must be completed within the limits of the existing right of way.
- The contractor shall be responsible for any additional permits necessary to complete the alternate technical concept.

3.0 Pre-Approved Concepts

3.1 The Commission has pre-approved the following concept. Prospective bidders may use this concept as an alternate technical concept. The concept shall be submitted to the Commission in accordance with these provisions.

(a) Two span prestressed concrete I girder bridge with MSE wall abutments

Concepts other than this pre-approved concept may also be submitted in accordance with these provisions.

4.0 Submittal of Alternate Technical Concepts.

4.1 Prospective bidders may submit an alternate technical concept or solution for evaluation prior to the bid opening. If the proposed alternate technical concept meets the minimum requirements and is given a "pass" recommendation the concept is considered pre-approved and may be submitted by the bidder along with bids for the other items of work contained in the request for proposal. All proposed alternate technical concepts are considered confidential and will not be shared with other bidders prior to the award of the project.

4.2 The contractor shall submit the alternate technical concept (ATC) with the following information:

(a) A description of both the existing contract requirements for performing the work and the proposed ATC.

(b) A detailed statement of the savings the concept or solution in expected to include.

(c) A statement of the probable effect the ATC will have on the contract completion time.

(d) A description of any previous use or submission of the same technical concept by the contractor, including dates, job numbers, results, and/or outcome of the ATC if previously submitted.

(e) Four copies of the complete proposed alternate technical concept shall be submitted to the Commission for review. The contractor may submit a conceptual ATC for approval stating the basic proposal and approximate cost savings in order to provide the contractor with the opportunity to submit an idea without large initial development costs if the ATC is rejected. Approval or disapproval of the ATC will be granted within five working days of receipt of the final proposal. Submittals may be made by email.

5.0 Evaluation of Alternate Technical Concepts.

5.1 Alternate technical concepts (ATC) will be evaluated on a pass/fail basis. ATC's that meet the minimum requirements will pass and be considered for bid. ATC's that do not meet the minimum requirements will fail and not be considered for bid.

5.2 Alternate Technical Concepts will be evaluated using the following criteria.

(a) The ATC meets the minimum requirements of the general conditions.

(b) The ATC re-design does not adversely affect the overall completion time and scope of the project.

(c) The ATC does not adversely affect the long term maintenance of the project.

(d) The ATC re-design costs to MoDOT does not adversely affect the cost of the overall project.

5.3 The Commission will have 5 working days to evaluate the alternate technical concept and give the contractor a pass or fail decision. The Commission will be the sole judge of acceptability of the ATC. If the ATC is given a pass recommendation the Commission will give a date for completion of the re-design. A request from the Commission for more information will extend the evaluation period another 5 working days after receipt of the additional information.

5.4 The contractor will have no claim for additional costs or delays, including development costs, loss of anticipated profits, or increased material or labor costs, if the ATC is rejected.

5.5 The Commission expressly reserves the right to adopt an alternate technical concept as standard practice for use on other contracts administered by the Commission.

6.0 Design Requirements.

6.1 The Commission will be responsible for providing the contract design plans for the lowest responsible bidder.

6.2 If the successful low bidder used a pre-approved alternate technical concept (ATC) the Commission will provide the drafting, revised engineering, and final production of plans for the approved ATC. The revised plans will be provided by the date that was given in the approval letter for the ATC prior to bid opening.

7.0 Alternate Technical Concepts - Contact and Evaluation Information

7.1 All requests for pre-approval of the bridge alternate technical concepts for this project should contact listed below:

Chad Zickefoose, Transportation Project Manager
Missouri Department of Transportation
3025 E Kearney Street
M.O. Box 868
Springfield, Missouri 65801

Telephone Number 417-895-7638
e-mail: Chad.Zickefoose@modot.mo.gov

7.2 All questions concerning the specific bridge questions can be directed to Ray Jansen at (573) 526-0247 or by email at Raymond.Jansen@modot.mo.gov.

8.0 Basis of Payment.

8.1 To exercise the alternate bridge options, separate pay items, descriptions and quantities are included in the itemized proposal for the two bridge alternates. The bidder shall bid only one of the two alternates and enter "0" in the contract unit price column for any pay item listed for the other alternate. The accepted quantity of the chosen alternate and other associated items will be paid for at the unit price for each of the appropriate pay items included in the contract.

8.1.1 The proposal documents contain all of the proposed work for the project to be bid as designed by the Commission. If the contractor elects to bid the project as designed, plan quantity will be paid for all pay items on bridge number A7501 in Alternate A.

8.1.2 If the contractor elects to bid the project with a pre-approved alternate technical concept, the contractor shall bid Alternate B. Payment for the alternate technical concept will be paid for by the contract unit bid price for Item 701-99.01, Alternate Technical Concept, per Lump Sum.

8.2 No direct payment will be made for any change in quantity of pay items not included in the alternate technical concept that are affected by the contractor's decision to the use an alternate technical concept on this project.

8.3 No direct payment will be made for delay of schedule due to the use of a alternate technical concept.

Original Bridge Plan Front Sheet

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

(53'-84'-84'-53') PRESTRESSED CONCRETE I-GIRDER SPANS

ROUTE	STATE	DISTRICT	SHEET NO.
H	MO	BR	1

JOB NO. J8S0724

CONTRACT ID.

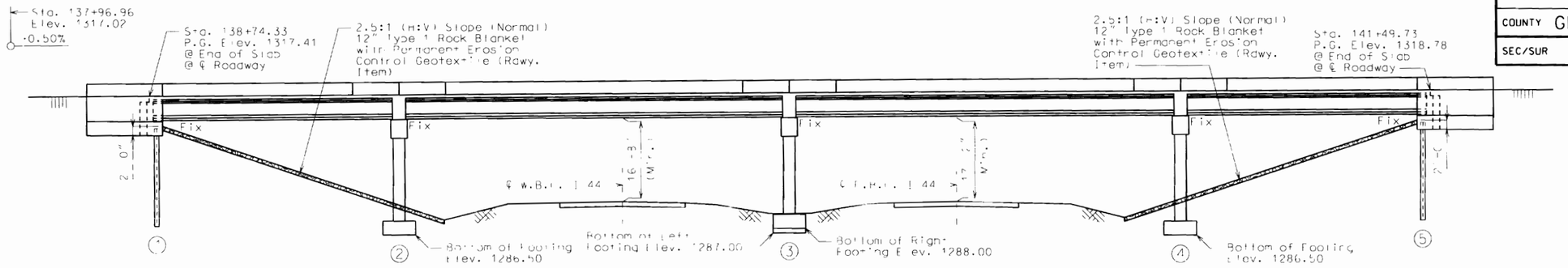
PROJECT NO.

COUNTY GREENE

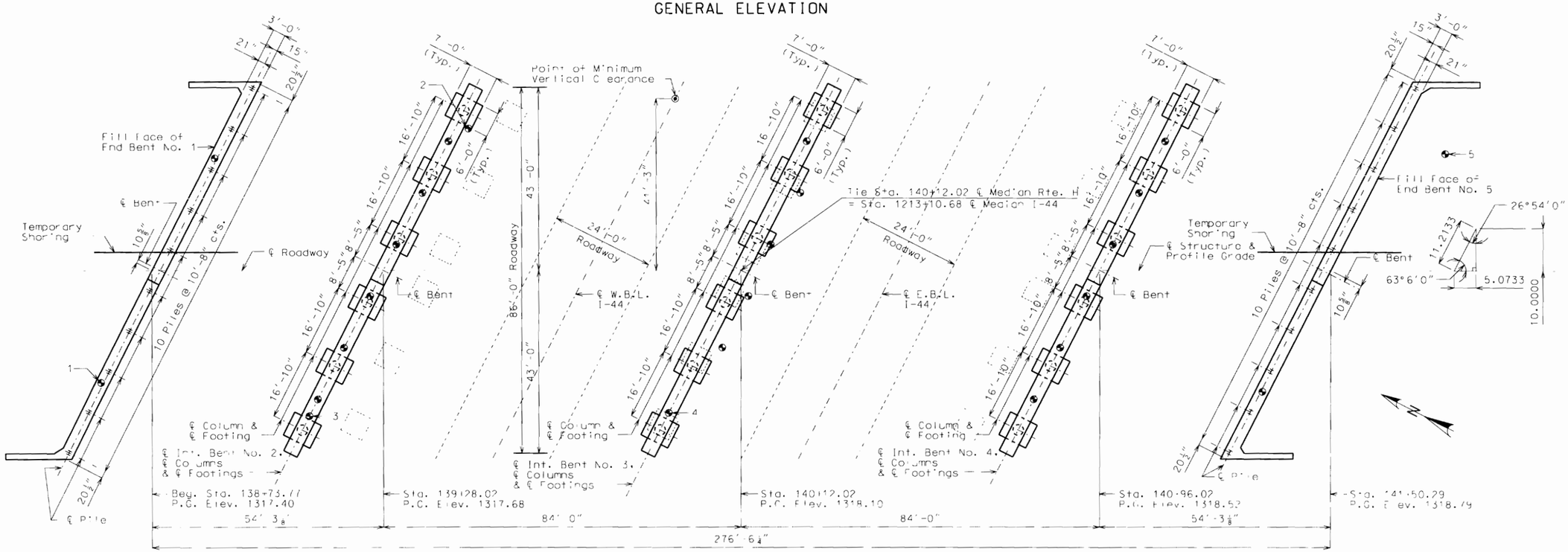
SEC/SUR 6 TWP 29N RGE 21W

STATE OF MISSOURI
RAYMOND J JANSEN
NUMBER PE-16126
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGN-D SEALED AND DATED ELECTRONICALLY

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



GENERAL ELEVATION



PLAN

"⊕" Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet for this structure. Boring data for the numbered locations is shown on Sheet No. 3. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, is available from the Project Contact upon written request as outlined in the Project Special Provisions. No greater significance or weight should be given to the boring data depicted on the plan sheets than is subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

Notes:

Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before any piles are driven for any bents falling within the embankment section.

For General Notes, Pile & Footing Data, Estimated Quantities for Slab or Concrete I-Girder and Location Sketch, see Sheet No. 2.

B.M. #2 "SQUARE" CUT IN NW CORNER OF BRIDGE CURB ON BRIDGE OVER I-44 ON GLENSTONE @ STA. 138+60±, ELEV. 1313.37

BRIDGE: OVER RTE. I-44

STATE ROAD: FROM RTE. AA TO RTE. 744

AT: RTE I-44 STA. 138+73.77

STD. 609.00
STD. 617.10
STD. 706.35
A7501

REV.

Designed Mar. 2008
Detailed Mar. 2008
Checked Mar. 2008

Note: This drawing is not to scale. Follow dimensions.