

December 14, 2007

Mr. Jay Bestgen
MoDOT Design Division
1320 Creek Trail Drive
Jefferson City, Missouri 65109

Re: Practical Design 2008 Awards for Excellence – Atchison Missouri River Crossing Approach

Dear Mr. Bestgen:

We appreciate the opportunity to submit this application for the MoDOT/ACEC Practical Design 2008 Awards for Excellence. The application is attached for your review.

The project we are submitting is **JIP0800A**, the replacement bridge over the Missouri River and approach roadway located in Missouri. The project is a part of an overall project that includes the Kansas approach roadway located in Atchison, Kansas. The portion of the project we are focusing on for the “Practical Design 2008 Award for Excellence” is the Missouri approach roadway.

There have been several years of collaboration between the Kansas and Missouri Departments of Transportation, Communities of Atchison and Winthrop and various federal and state agencies. A concept plan was developed and the original design taken to 50 % plan completion.

In an effort to apply practical design techniques to the roadway portion of the project, MoDOT and HNTB worked closely together to produce a design that minimized impacts to adjacent property owners while not compromising safety or constructability. The best project was delivered for the least amount of cost.

Below is a brief summary of how this project compares to the Practical Design 2008 rating guidelines. We are excited to submit project **JIP0800A** for consideration in the 2008 Awards for Excellence.

Scope of Project:

MoDOT and KDOT were charged with replacing a structurally deficient bridge over the Missouri River and approach roadway. Funding and scheduling were paramount issues between the two state governments in order to not jeopardize funding generated by the Kansas Comprehensive Transportation Program.

Scope Comparison:

The scope items for comparison are as follows:

Before practical design techniques were employed, the proposed highway met the need of connecting the new bridge with the existing highway. However, a closer look revealed that the total buyouts of two businesses and the two right turn lanes were unnecessary. The turn lanes proved to be unjustified by traffic, and removing them will help maintain current traffic patterns. Tightening the horizontal curvature and revising the profile allows the highway to match existing sooner and keep out of the gas station and trailer sales operations. In addition, costly environmental cleanup will no longer be required for the removal of gasoline storage tanks. Morrow Road was preliminarily designed to intersect US-59 at 90 degrees, but by also shifting the alignment to the east, we are able to avoid impacts to the trailer sales operation while removing the intersection skew.

B. Purpose and Need:

This project meets the project's purpose and need by providing a functional approach roadway to the new river bridge construction while minimizing impacts to the adjoining property owners. This project represents the most appropriate, efficient, effective and safe design applying the aforementioned practical design approach.

C. New techniques, methods and non-traditional design for this project included the following:

The project concept was designed to accommodate right turn lanes at Fowler Avenue and an entrance into a historic site. Because of the observed low volume of turning vehicles, the right turn lanes were not justified and therefore eliminated, saving earthwork and pavement.

The project concept provided an eastern tie-in horizontal curve radius of 1,432 feet with a corresponding superelevation of 4.8% which required the buyout of an active service station and trailer sales building. The practical design approach was to sharpen the horizontal curvature to 1,000 ft. radius with 6% superelevation allowing the service station to remain in operation. The revised curvature still exceeds minimum radius for the design speed of 40 miles per hour.

Revising the profile to match the existing highway sooner shortened the length of the project and will allow traffic to be carried through construction more easily.

By using asphalt surfacing and milling for the tie-in connection to the existing roadway to the east, the need for grading and surfacing of a temporary detour was eliminated.

The concept for tying existing Morrow Road would have resulted in the purchase of right of way from a local trailer sales operation including an expensive billboard. By shifting the connection approximately 200 ft. east, the trailer sales operation and billboard will not be impacted.

Cost Savings (Roadway Approach and R/W Items Only)

Concept estimate to meet the purpose and need:

\$3.298 million construction + \$1.4 million R/W (See Attached Project Budget)

Practical Design estimate to meet the purpose and need:

\$1.323 million construction + \$494,000 R/W (See revised Project Estimate)

Roadway user expectations

This project will meet the roadway user's expectation by closely matching the current access to adjoining businesses while improving the approach roadway to the new proposed bridge over the Missouri River. By utilizing an asphalt tie-in to the existing roadway the drivers will be able to more closely follow existing driving patterns during construction.

**MoDOT PROJECTS
2008 APPLICATION FORM**

Job No. JIP0800A **Route** US-59 **County** Buchanan

STIP Description (Scoping or Construction, state which STIP) Replace bridge over Missouri River and approach roadways. Also reconstruct intersections at Fowler Ave. and Morrow Road.

Is the submittal for the entire project or just a portion of the project? Please explain: Only the east roadway approach is being considered for practical design.

Project Manager (could have both) **MoDOT** Thomas Skinner **Consultant** Dale McGregor

Key core team members as approved by the MoDOT PM (may include consultants) (limit of 9)

Thomas Skinner (MoDOT) Robert Lyon (HNTB)

Bryan Bailey (MoDOT) Dale McGregor (HNTB)

Laura Kaiser (HNTB)

Project Contacts: **District** Thomas Skinner **Consultant** Dale McGregor

Project Budget:

Conceptual budget \$ 3.298 M **Initial STIP Budget** \$ 3.298 M

Final STIP budget \$ 1.323 M (as of 12-14-07) **Award amount** \$

Other : Project is currently under final design. The right of way cost was programmed in the initial STIP at \$1.4 million and now is at \$494,000. Practical design techniques have accomplished this \$906,000, or 65%, savings over the initial estimate.

Value Engineering study during design? yes no (if yes) **Project Stage**

Total VE savings implemented \$ **VE Contact Person**

Construction-stage VE (VECP)? yes no (if yes) **Explain**

Total VECP savings \$ **VECP Contact Person**

What would make this entry stand out from the rest of the entries when considering MoDOT's practical design philosophy? Creativity and collaboration were the key components in delivering a "good" project instead of a "great" project to provide the traveling public a more economical product. What could have cost \$3.298 million to meet the purpose and need was reduced by \$1.32 million in roadway costs and \$906,000 in right of way costs including a service station with storage tanks and trailer sales operation with outdoor billboard. These savings in cost were accomplished by eliminating unnecessary right turn lanes at low volume

intersections, realigning the highway to reduce the length of new roadway, and eliminating temporary detour grading and paving.

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

ALL ENTRIES MUST BE RECEIVED NO LATER THAN CLOSE OF BUSINESS ON DECEMBER 15, 2007.

FHWA REG NO.	STATE	PROJECT NO.	YEAR
7	KANSAS	59-3 K-8238-02	2008
7	MISSOURI	JIP0800A	

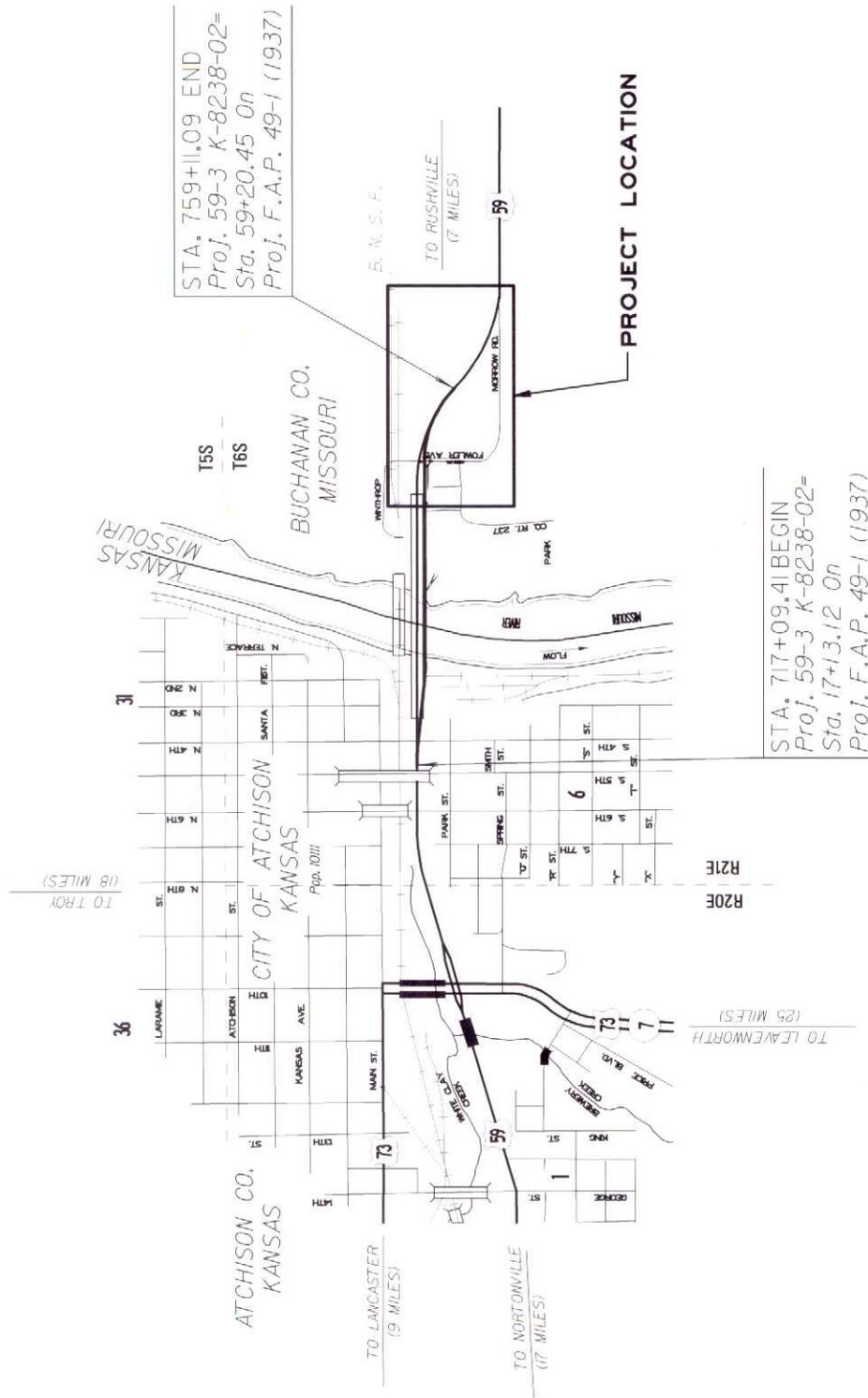


EXHIBIT I
PROJECT LOCATION
JOB NO. JIP0800A

FHWA REG NO.	STATE	PROJECT NO.	YEAR
7	KANSAS	59-3 K-8238-02	2008
7	MISSOURI	JJPC800A	

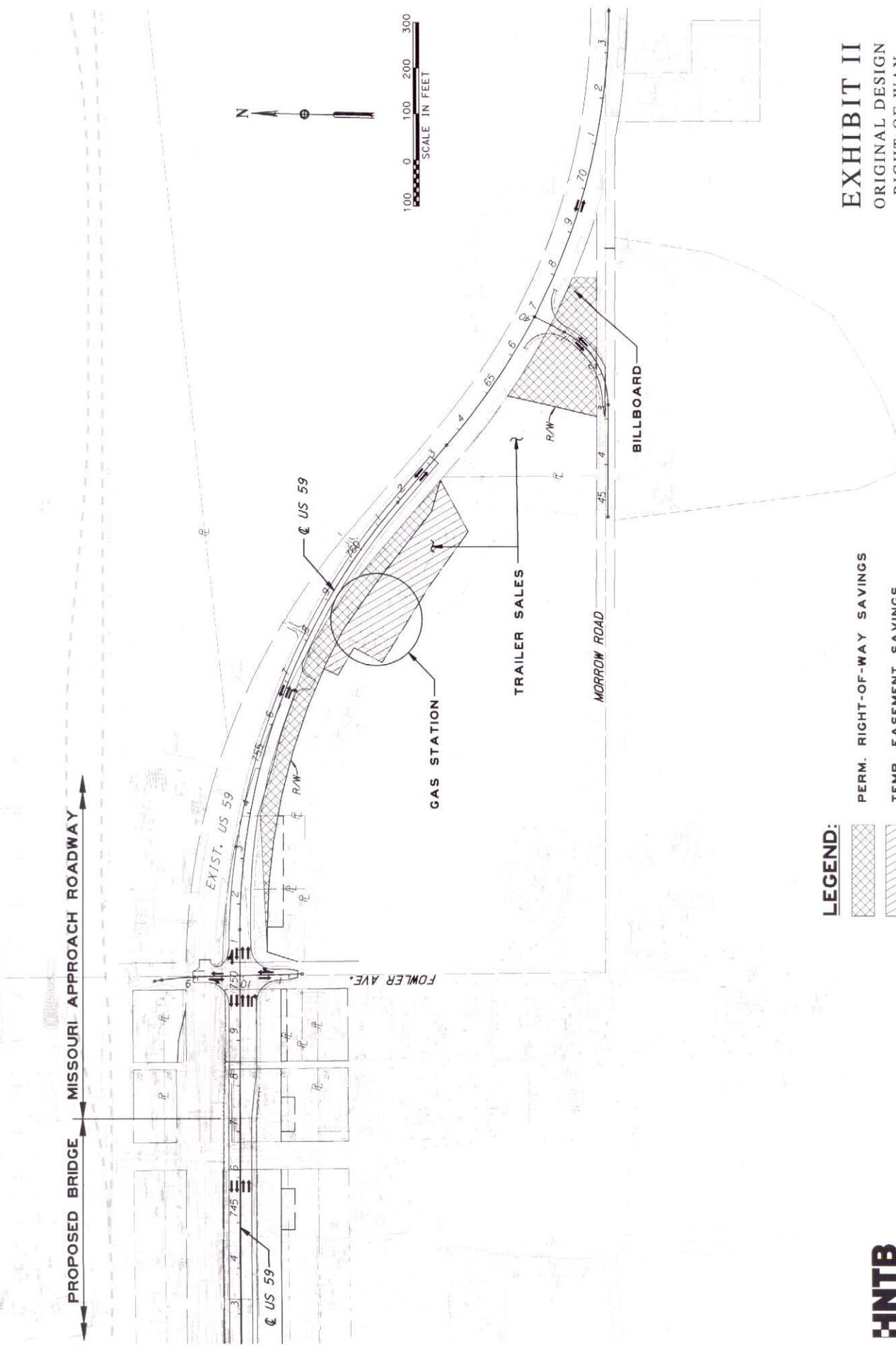


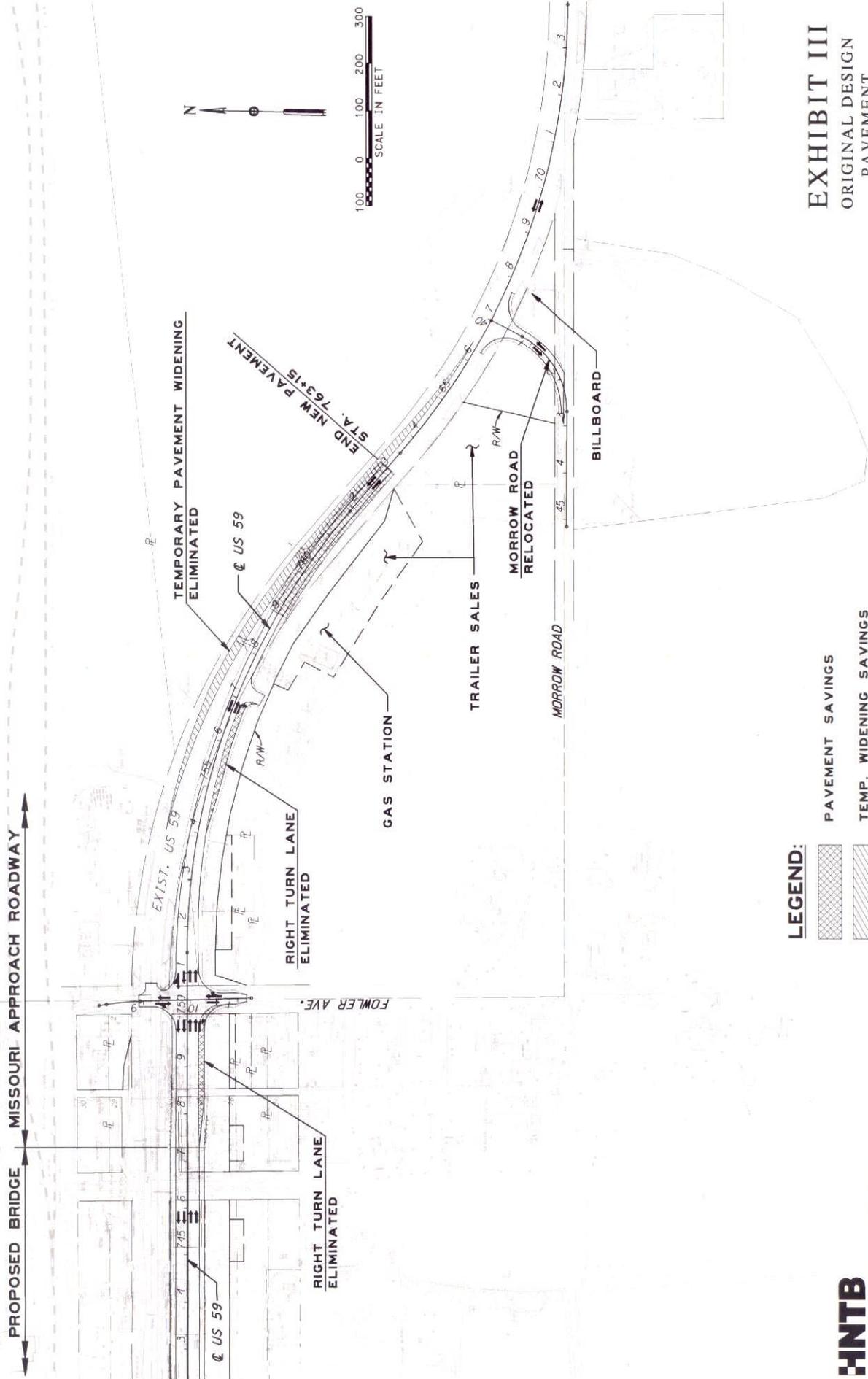
EXHIBIT II
ORIGINAL DESIGN
RIGHT-OF-WAY

LEGEND:

- PERM. RIGHT-OF-WAY SAVINGS
- TEMP. EASEMENT SAVINGS

FHWA REG NO.	STATE	PROJECT NO.	YEAR
7	KANSAS	59-3 K-8238-02	2008
7	MISSOURI	J/P0800A	

PROPOSED BRIDGE → MISSOURI APPROACH ROADWAY →



LEGEND:

-  PAVEMENT SAVINGS
-  TEMP. WIDENING SAVINGS

EXHIBIT III
ORIGINAL DESIGN
PAVEMENT

FHWA REG NO.	STATE	PROJECT NO.	YEAR
7	KANSAS	59-3 K-8238-02	2008
7	MISSOURI	J/P0800A	

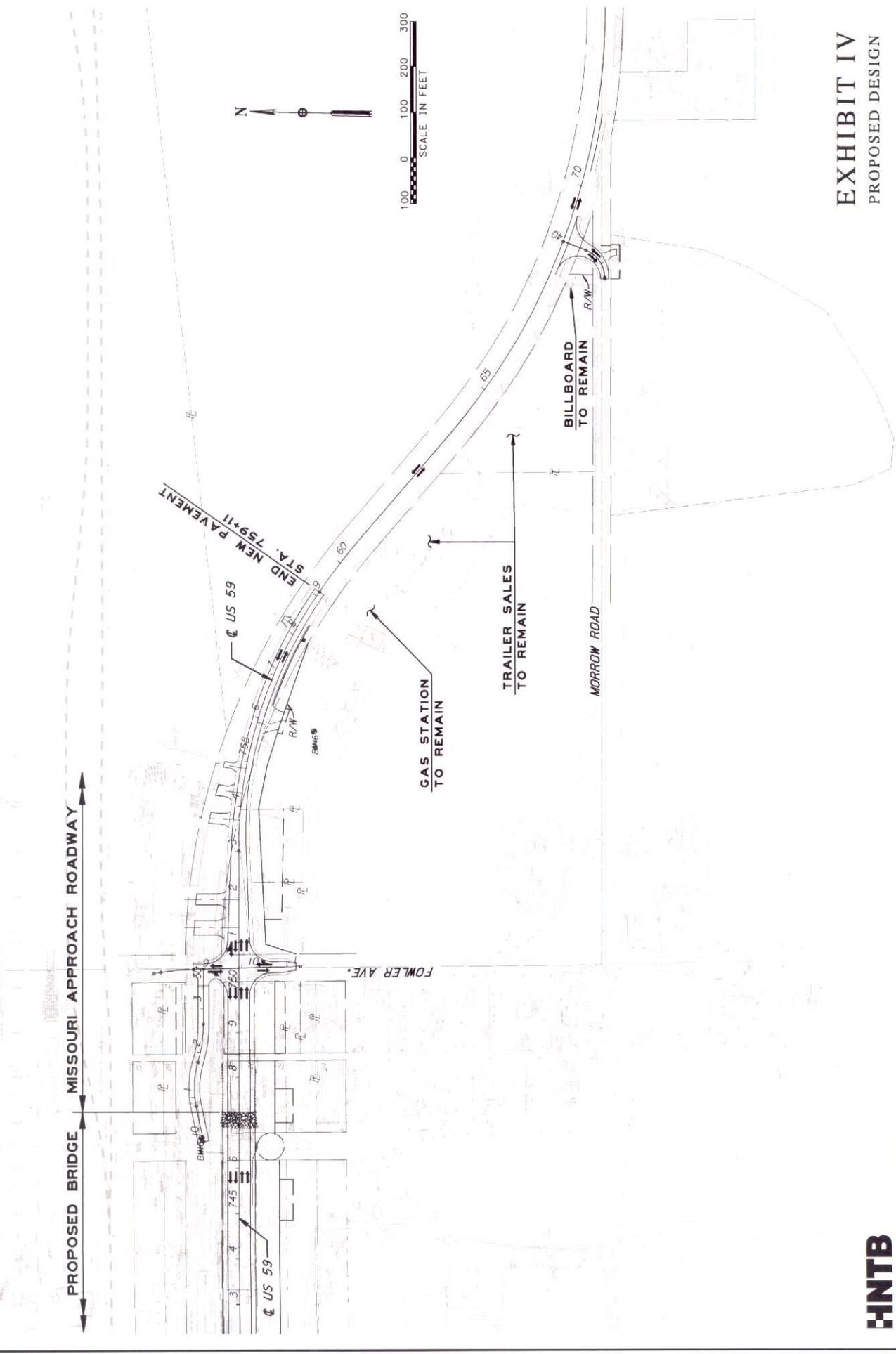


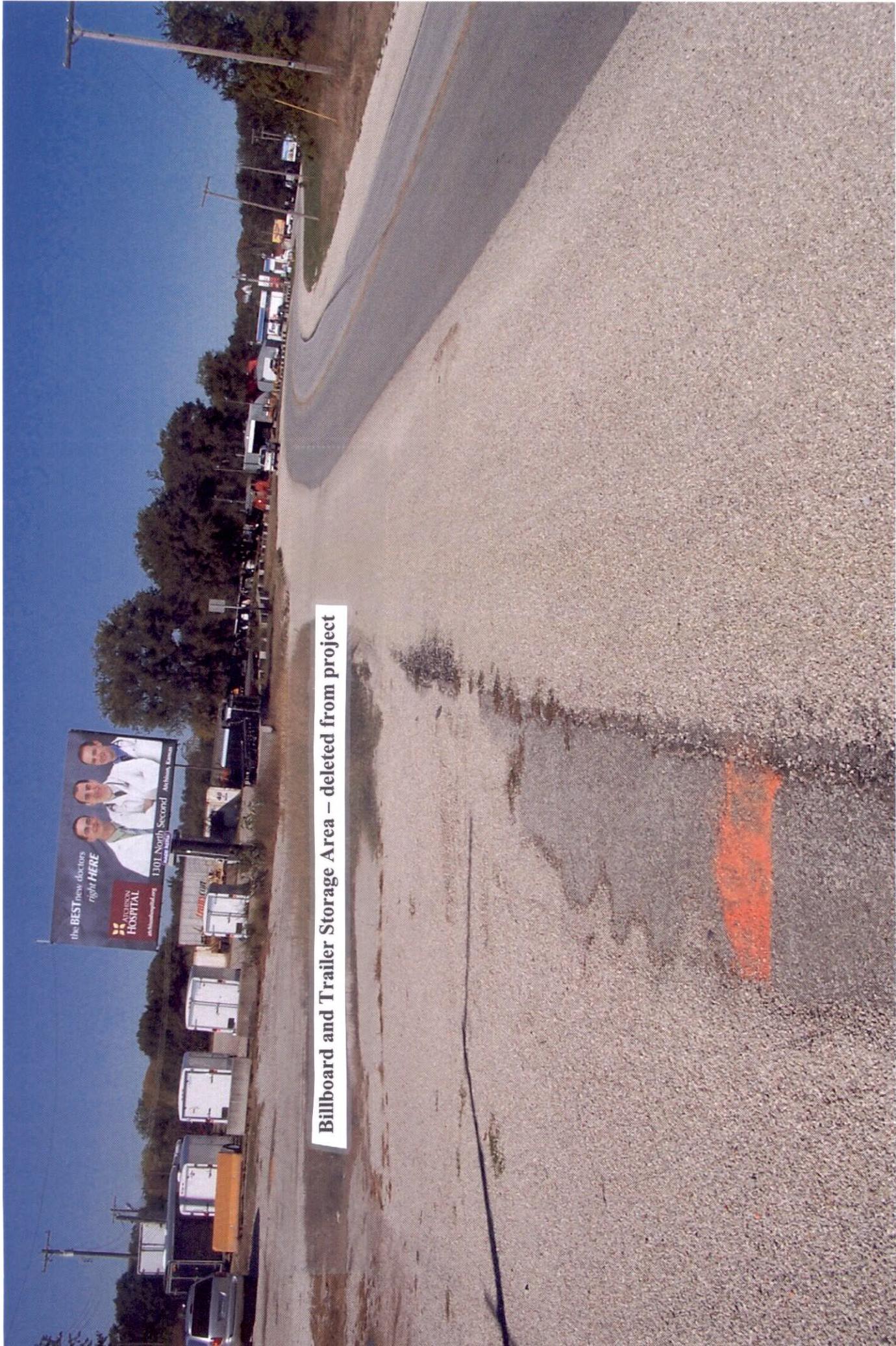
EXHIBIT IV
PROPOSED DESIGN



Woody's Gas Station – deleted from project



Gas Storage Tanks – deleted from project



Billboard and Trailer Storage Area - deleted from project

Project Budgeting

Toolbar

Navigate To... G

Job Number: 1P0800A District: 1 County: BUCHANAN Route: US 59 S
 Project Description: Construct bridge and roadway across Missouri River at Atchison, Kansas.

Grading/Drain. 1319	Base Surface 1979	Bridge Est. 24000	Misc. 2411	Contract Est. 29709
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Remaining Cost Estimate Breakdown

STIP PROGRAM

Grad & Drainage = \$ 1,319
 Base & Surface = \$ 1,979
TOTAL = \$ 3,298 million

Prior to Practical Design

Constr. Conting. <input checked="" type="checkbox"/> Auto 594	Const. Est. --- 3030
Utilities 1064	
Other 0	Const. Cost --- 3136
R/W Acquisition 0	
Other Incidental 0	
R/W Incidental 353	
Prelim. Engr. 0	
Constr. Engr. <input checked="" type="checkbox"/> Auto 2080	
Ttl. Incidental 2433	
Incentive 0	

Yearly Breakdown of Project Cost

	Prior To 2008	2008	2009	2010	2011	2012	2013	Future	F
R/W Acquisition by Others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Preliminary Engineering	1384	346	0	0	0	0	0	0	0
R/W Acquisition	0	1400	0	0	0	0	0	0	0
Construction Cost	0	0	31367	0	0	0	0	0	3
FT D99	3-IS-REHAB	0	1400	31367	0	0	0	0	32

R/W Acquisition = \$ 1.4 million.

Date: 12/14/2007

USER ITEM LIST

Time: 7:51:05 AM

District: 04

Job Number: J1P0800

Route: US-59

County:

File Name: J:\Estimates\2008 Estimates\Buchanan\J1P0800A\J1P0800_Estimat
English

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ITEM NUM.	ITEM DESCRIPTION	UNITS	QUANTITY	PB	UNIT PRICE	ITEM COST
201-99.01 SEC[01] PI#[01]	CLEARING AND GRUBBING	LS	1	AH	9150.00	\$9,150.00
			1.0			
203-99.07 SEC[01] PI#[04]	COMPACTION OF EARTHWORK (TYPE A) (MR-5-5)	CUYD	5947.0	AH	1.00	\$5,947.00
			1.0			
203-99.07 SEC[01] PI#[04]	COMPACTION OF EARTHWORK (TYPE AA MR 0-5)	CUYD	3181.0	AH	1.50	\$4,771.50
			1.0			
203-99.07 SEC[01] PI#[04]	COMMON EXCAVATION (CONTRACTOR FURNISHED)	CUYD	9863.0	AH	8.00	\$78,904.00
			1.0			
203-99.07 SEC[01] PI#[04]	COMMON EXCAVATION	CUYD	5728.0	AH	6.00	\$34,368.00
			1.0			
203-99.07 SEC[01] PI#[04]	ROCK EXCAVATION	CUYD	2432.0	AH	15.00	\$36,480.00
			1.0			
216-99.01 SEC[01] PI#[01]	REMOVAL OF EXISTING STRUCTURE	LS	1	AH	150000.00	\$150,000.00
			1.0			
304-99.05 SEC[01] PI#[02]	GRANULAR SUBBASE (4 IN.)	SQYD	4181.3	AH	13.00	\$54,356.90
			0.1			
304-99.05 SEC[01] PI#[02]	AGGREGATE BASE (AB-3) (6 IN.)	SQYD	7655.6	AH	10.00	\$76,556.00
			0.1			
304-99.10 SEC[01] PI#[02]	CALCIUM CHLORIDE	TONS	6.0	AH	760.00	\$4,560.00
			0.1			
310-99.07 SEC[01] PI#[02]	SURFACING MATERIAL (AB-3)	CUYD	482.0	AH	40.00	\$19,280.00
			1.0			
403-99.10 SEC[01] PI#[02]	HOT MIX ASPHALT - COMMERCIAL GRADE CL A	TONS	1837.0	AH	75.00	\$137,775.00
			0.1			
502-99.05 SEC[01] PI#[02]	CONCRETE PAVEMENT (9 IN. UNIFORM) (AE)	SQYD	261.9	AH	450.00	\$117,855.00
			0.1			
502-99.05 SEC[01] PI#[02]	CONCRETE PAVEMENT (9 IN. UNIFORM AE NRDJ)	SQYD	3965.9	AH	55.00	\$218,124.50
			0.1			
502-99.05 SEC[01] PI#[02]	CONCRETE PAVEMENT (8 IN. UNIFORM AE NRDJ)	SQYD	972.6	AH	54.00	\$52,520.40
			0.1			

ITEM NUM.	ITEM DESCRIPTION	UNITS	QUANTITY	PB	UNIT PRICE	ITEM COST
603-99.01 SEC[01] PI#[04]	WATER	LS	1	AH	2000.00	\$2,000.00
			1.0			
606-99.02 SEC[01] PI#[04]	GUARDRAIL END TERMINAL (SRT)	EA	2.0	AH	1750.00	\$3,500.00
			1.0			
606-99.03 SEC[01] PI#[04]	GUARDRAIL; STEEL PLATE	LF	99.0	AH	55.00	\$5,445.00
			1.0			
611-99.07 SEC[01] PI#[01]	SLOPE PROTECTION (AGGREGATE)	CUYD	160.0	AH	80.00	\$12,800.00
			1.0			
616-99.01 SEC[01] PI#[04]	TRAFFIC CONTROL	LS	1	AH	20000.00	\$20,000.00
			1.0			
618-10.00 SEC[01] PI#[04]	MOBILIZATION	LS	1.0	AH	44300.00	\$44,300.00
			1.0			
620-99.03 SEC[01] PI#[04]	EPOXY PAVEMENT MARKING (WHITE 6 IN.)	LF	12333.0	AH	.75	\$9,249.75
			1.0			
620-99.03 SEC[01] PI#[04]	EPOXY PAVEMENT MARKING (YELLOW 4 IN.)	LF	7184.0	AH	.45	\$3,232.80
			1.0			
622-99.05 SEC[01] PI#[02]	MILLING	SQYD	620.0	AH	10.00	\$6,200.00
			0.1			
703-99.07 SEC[01] PI#[03]	BRIDGE APPROACH SLAB FOOTING	CUYD	42.3	AH	250.00	\$10,575.00
			0.1			
805-99.01 SEC[01] PI#[01]	SEEDING	LS	1	AH	3000.00	\$3,000.00
			1.0			
806-99.01 SEC[01] PI#[01]	EROSION CONTROL	LS	1	AH	10000.00	\$10,000.00
			1.0			
903-99.01 SEC[40] PI#[04]	HIGHWAY SIGNING	LS	1	AH	20000.00	\$20,000.00
			1.0			



MEMORANDUM

Missouri Department of Transportation

Right of Way District 1

TO: Thomas Skinner-pd

FROM: Bryan S. Bailey *Bryan S. Bailey*
Right of Way Manager

DATE: December 13, 2007

SUBJECT: Right of Way Cost Estimate

County: Buchanan

Route: 59

Job: J1P0800

Date: December 13, 2007

Fed. Project: N/A

Alternate: N/A

Termini: Missouri/Kansas State line

Preparer: Bryan S. Bailey *BS*
Right of Way Manager

Project Development Stage:

- | | | | |
|---------------------------------------|--------------|--------------------------------|-------|
| 1. Project Initialization | _____ | 4. Right of Way Plans Complete | _____ |
| 2. Conceptual Plan/
Location Study | _____ | 5. Acquisition Complete | _____ |
| 3. Preliminary Plans | <u> X </u> | | |

Estimated Right of Way Acquisition Costs:	\$ 494,000.00
Estimate of Incidental Costs:	\$ 32,000.00
Total Right of Way Cost Estimate:	<u>\$ 526,000.00</u>

Previous Total Right of Way Cost Estimate: \$1,050,000
(includes incidentals) \$41,600
Date: 09/18/07

Comments: Updated estimated based on preliminary plans submitted to MoDOT. Number of improvements taken is four. The square feet of new right of way has been reduced. Eight parcels will be affected.

*Practical Design
Revised Estimate.*