GBA GEORGE BUTLER ASSOCIATES, INC.

Engineers · Architects
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December 18, 2007

MoDOT Design Division, ATTN: Mr. Jay Bestgen
1320 Creek Trail Drive
Jefferson City, MO 65109

SUBJECT: 2008 Practical Design Awards for Excellence

Dear Judges:

George Butler Associates, Inc. is pleased to submit this entry for the 2008 Practical Design Awards for Excellence. GBA and Platte County started a study for this Off-System project in January 2005 after it was earmarked for $2 million by County vote. The project provided improvements to Elm Grove Road and Sharps Station Road, including upgrades to over 7 miles of gravel roadway and replacement of two bridges including a structurally deficient truss bridge.

The study focused on safety improvements to the vertical and horizontal alignments, drainage improvements, pavement section improvements, and bridge replacements for this semi-rural developing area of the County. After completing the study and reviewing all the deficiencies with current AASHTO requirements, it was apparent to the County and GBA that the project budget would not cover the over $5 million price tag for the "Cadillac" improvements necessary to bring it up to AASHTO standards.

GBA was asked to look at a less expensive "Chevy" alternative that would still provide a sound solution for the major project components. A cost benefit analysis was conducted to explore the use of asphalt pavement versus chip and seal, identify work that could be constructed with County forces, and determine drainage structures that could remain in-place. The design storm requirements for drainage structures were also reduced and grading was significantly minimized at several locations to cut costs. This resulted in "Chevy" project costs of $3.7 million; still significantly over the County budget.

A public meeting was held in early 2006 to engage residents and stakeholders and discover what the real public concerns were for this growing area. The public meeting was all about listening; attendees were given color stickers to place on the project maps to identify their hot issues. **The message received from the public was that the greatest concerns were eliminating the gravel dust on the road and replacing the old truss bridge**.

In February of 2007, GBA was retained to proceed with final design plans for this project. GBA and Platte County implemented practical design on every facet of the project to meet the County's budget and satisfy the real purpose and need. **The County needed to improve the characteristics of the roadway and replace a deficient bridge, and ultimately leave the project in a safer condition.** The roadway improvements included replacing necessary drainage structures, subgrade and pavement improvements, and ditch regrading. Safety improvements included additional signing throughout the corridor, widening the roadbed width, and adding guardrail protection in critical areas. A project savings of $1.5 million was achieved by reducing the scope and addressing the primary needs of the project.

Bridges were also revisited for the project. One of the bridges was in good structural condition, but was hydraulically deficient, creating backwater issues with the 100-year storm. The bridge also had a deficient rail. **Utilizing practical design, this bridge was not replaced**. There was no accident history at this location due to flooding and the water generally overtopped the roadway for short durations. Therefore, the safety of this bridge was improved by adding a secured guardrail system to the bridge, which resulted in a savings of almost $100,000.

The second bridge on the project, a truss bridge over Jowler Creek, was also revisited for practical design. This bridge was replaced with a cost-efficient prestressed concrete beam bridge. The County's current criteria called for modeling the bridge for less than one foot of backwater for the 100-year storm. This bridge is just upstream of the Platte River and the design was controlled by the Platte River backwater. With the understanding that this bridge qualified for Soft Match credit, the team coordinated with MoDOT on the project design parameters. Project design criteria was agreed upon that would protect the proposed structure from the 25-year Platte River backwater and provide 100-year protection for the Jowler Creek flows. This reduced the bridge size from almost 200 feet to 114 feet.

The effective bridge width was reduced to 24 feet to match the existing roadway. Capitalizing on the reduced width, an innovative approach was taken to the bridge girders to reduce costs. One entire girder line was removed, making this a three-girder bridge. It is unlikely that the bridge will ever be widened under traffic, and eliminating the additional girders was cost effective, saving the County $18,000 on this item alone. The total savings on the Jowler Creek bridge utilizing practical design was approximately $300,000.

We believe this is an exceptional example of Practical Design success because it demonstrates practicality in a variety of areas. The construction improvements were bid at $1.93 million. This represents a construction savings of more than $1.8 million over the original "Chevy" design and satisfied the County budget. **In addition, this project was not only designed in 2007, but was let in July of 2007, with construction completed in December of 2007.** More specifically, the project spanned a period of 10 months from design inception to completion of construction.

We hope you will find this project worthy of recognition. The Platte County and GBA team is proud of the outcome and a strong supporter of the Practical Design approach.

Sincerely,

GEORGE BUTLER ASSOCIATES, INC.

Cory Clark
Project Manager

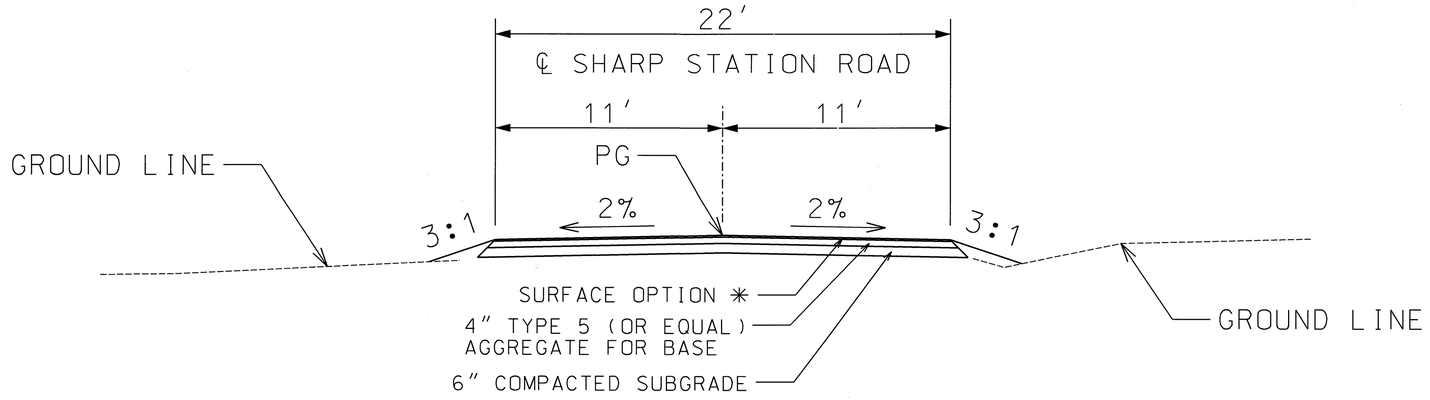
SHEET NO.	TOTAL SHEETS
2	30

ELM GROVE ROADWAY IMPROVEMENTS

PLATTE COUNTY

DATE 6/27/17

GEORGE BUTLER ASSOCIATES, INC.
Engineers Architects



* Pavement surface will be paid as 1 of the 3 following surface options:

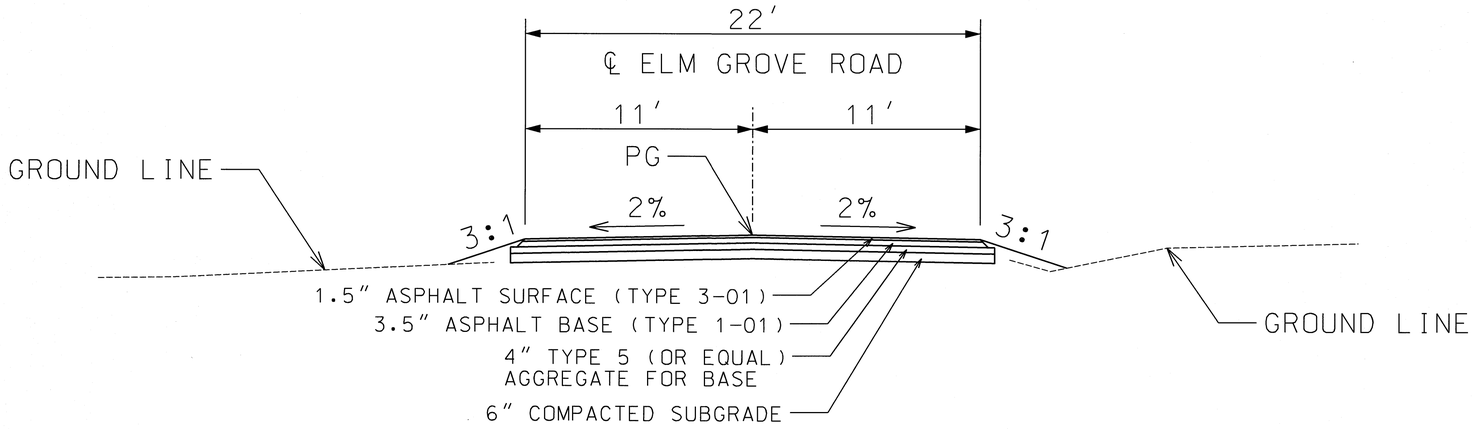
1) Double chip and seal.

2) 0.5" Micro Surface (Type 3-01) over a single chip and seal,

3) "None" - Platte County to complete with their own forces.

SECTION ON TANGENT

TYPICAL SECTION SHARP STATION ROAD
STA. 11+11 TO STA. 25+17
STA. 25+46 TO STA. 142+12



SECTION ON TANGENT

TYPICAL SECTION ELM GROVE ROAD
STA. 1+25 TO STA. 243+50
TYPICAL SECTION SHARP STATION ROAD
STA. 10+11 TO STA. 11+11

TYPICAL SECTION SHEET

ELM GROVE ROADWAY IMPROVEMENTS

PLATTE COUNTY

DATE 6/27/07

GBA GEORGE BUTLER ASSOCIATES, INC.
Engineers Architects

CONSERVATION COMMISSION OF MO

STATE OF MISSOURI

STA. 242+27 TO
STA. 243+50
REMOVE EXISTING
CHIP AND SEAL PAVEMENT

250

255

245

260

STINNETT CONSTRUCTION CO INC

WB ELEVEN LLC

WB ELEVEN LLC

PT STA 248+51.39

PI STA 249+94.49

PC STA 253+37.16

PT STA 257+67.61

S 87°01'29" W

S 89°30'17" W

N 51°10'21" W

℄ ELM GROVE ROAD

STA. 243+50
END ELM GROVE ROAD
PAVEMENT

STA. 259+00
END
ELM GROVE
IMPROVEMENTS

MATCHLINE 243+00

TYPE 1 LINEAR DITCH WORK
STA. 243+00 TO STA. 259+00. RT.

WALLACE, DONALD E & KAY V

℄ ELM GROVE
ROAD CURVE DATA

PI	245+97.90
PC	242+41.51
PT	248+51.39
Δ	74°19'60" (RT)
D	12°11'18"
L	609.87'
T	356.39'
R	470.09'

℄ ELM GROVE
ROAD CURVE DATA

PI	255+62.51
PC	253+37.16
PT	257+67.61
Δ	41°53'23" (RT)
D	9°43'54"
L	430.44'
T	225.35'
R	588.75'

LEGEND

- PROPOSED CULVERT REPLACEMENT
- EXISTING CULVERT
- PROPOSED RIPRAP
- TYPE 1 OR TYPE 2 LINEAR DITCH WORK

SCALE IN FEET

0 100 200 300

EXISTING GROUND PROFILE

813.21	812.02	810.15	808.39	806.73	804.79	803.10	800.94	798.55	795.03	791.23	788.15	785.97	785.15	784.00	784.82	784.90	787.29	790.89
243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261

ELM GROVE ROAD PLAN/PROFILE

STA. 243+00 - STA. 259+00

Note:
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' in back of the fill face of the end bents before piles are driven for any bents falling within the embankment section.

SHEET NO.	TOTAL SHEETS
9	43

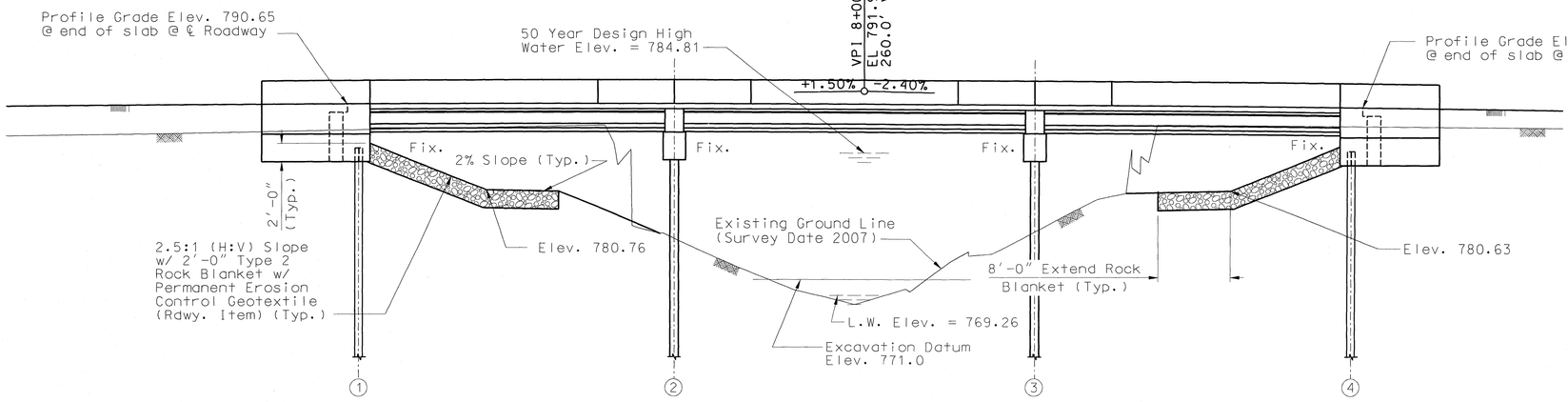
SHARP STATION ROAD OVER JOWLER CREEK

PLATTE COUNTY

STATE OF MISSOURI
JONATHAN D. KARST
PE-2006002826
PROFESSIONAL ENGINEER

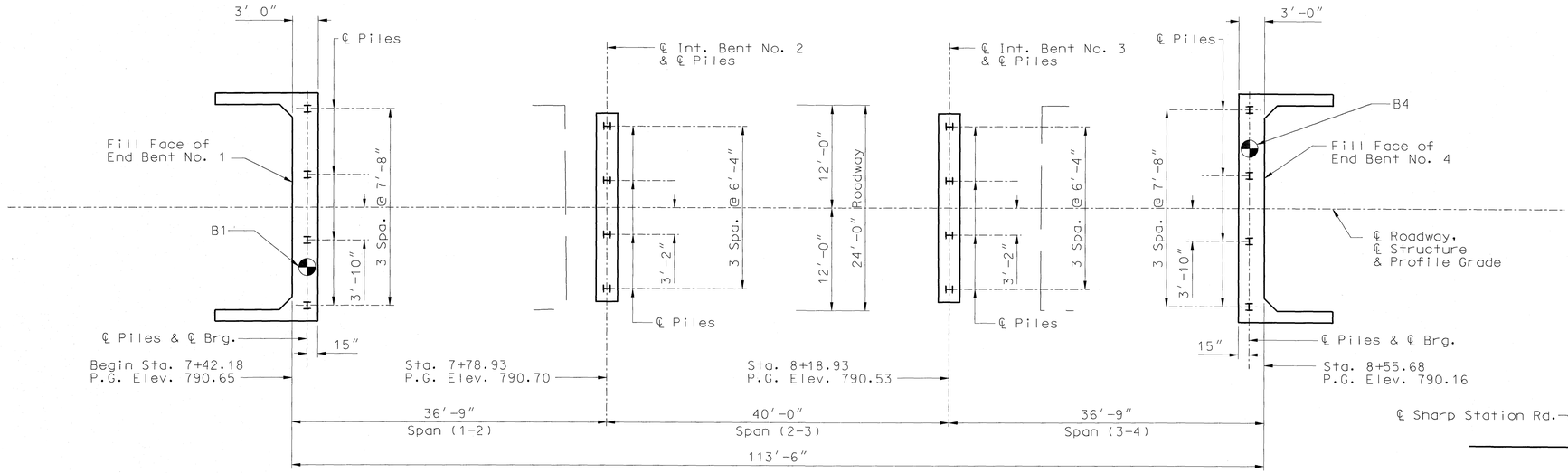
DATE 04/24/2007

GBA GEORGE BUTLER ASSOCIATES, INC.
Engineers Architects

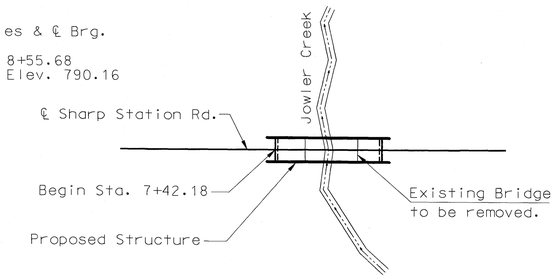


GENERAL ELEVATION

(35' - 40' - 35') Prestressed Concrete I-Girder Spans



PLAN



LOCATION SKETCH

Note:

◓ indicates location of borings.

All longitudinal dimensions are horizontal.

For Hydrologic Data, General Notes, Estimated Quantities and Pile Data, see Sheet No. 10.

For Boring Data, see Sheet No. 11.

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. 11. 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 Geotechnical Engineer for the design of the project, is contained in the Geotechnical Report and is available from George Butler Associates, Inc. upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is subsurface data available from the Geotechnical Report or elsewhere.

Neither the Owner nor George Butler Associates, Inc. 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 Geotechnical Report.

Site investigation and geotechnical engineering report supplied by Kleinfelder, Inc.

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

BENCHMARK: STA. 8+91.99, 115.71' LT.
RR SPIKE ELEV. = 784.35

Detailed March 2007
Checked April 2007

SHEET NO.	TOTAL SHEETS
23	43

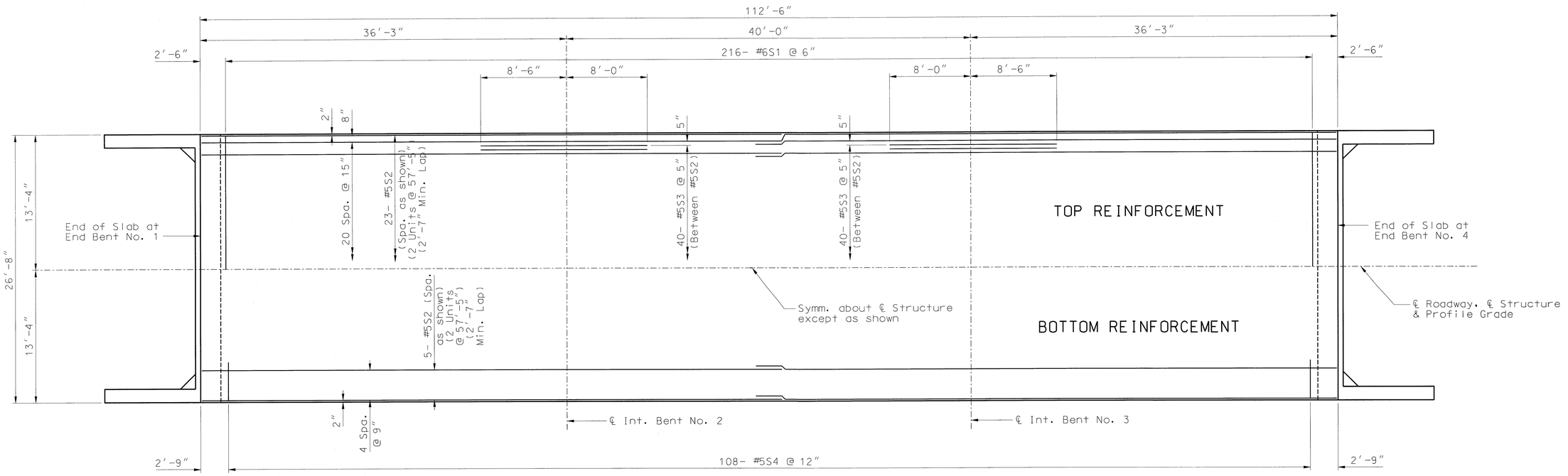
SHARP STATION ROAD OVER JOWLER CREEK

PLATTE COUNTY

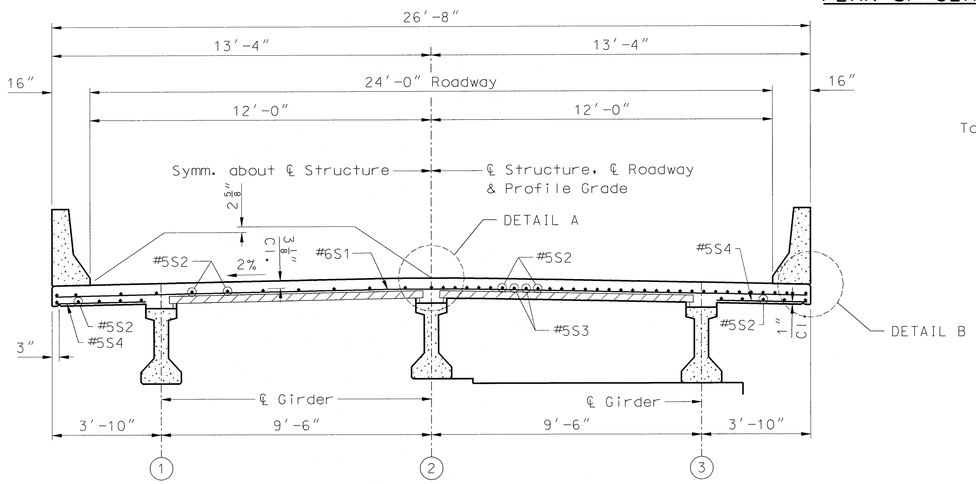
STATE OF MISSOURI
JONATHAN D. KARST
NUMBER
PE-2006002826
PROFESSIONAL ENGINEER

DATE 04/26/2007

GBA GEORGE BUTLER ASSOCIATES, INC.
Engineers Architects



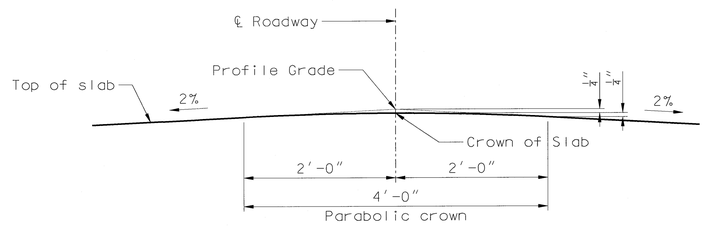
PLAN OF SLAB SHOWING REINFORCEMENT



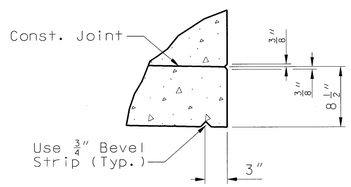
HALF SECTION NEAR ℄ SPAN

HALF SECTION NEAR INT. BENT

SECTION THRU SLAB



DETAIL A



DETAIL B

Notes:

Longitudinal dimensions are measured horizontally.

For Theoretical Slab Haunching Diagram & Theoretical Bottom of Slab Elevations, see Sheet No. 24.

For Girder Camber Diagram, see Sheet No. 24.

For details and locations of Slab Drains, see Sheet No. 25.

For details of Precast Prestressed Panels, see Sheet No. 22.

For Details and Reinforcement of Safety Barrier Curb not shown, see Sheet Nos. 26-28.

For Slab Pouring Sequence and Slab Construction Joint Details, see Sheet No. 24.

Detailed March 2007
Checked April 2007

SLAB PLAN AND SECTION

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

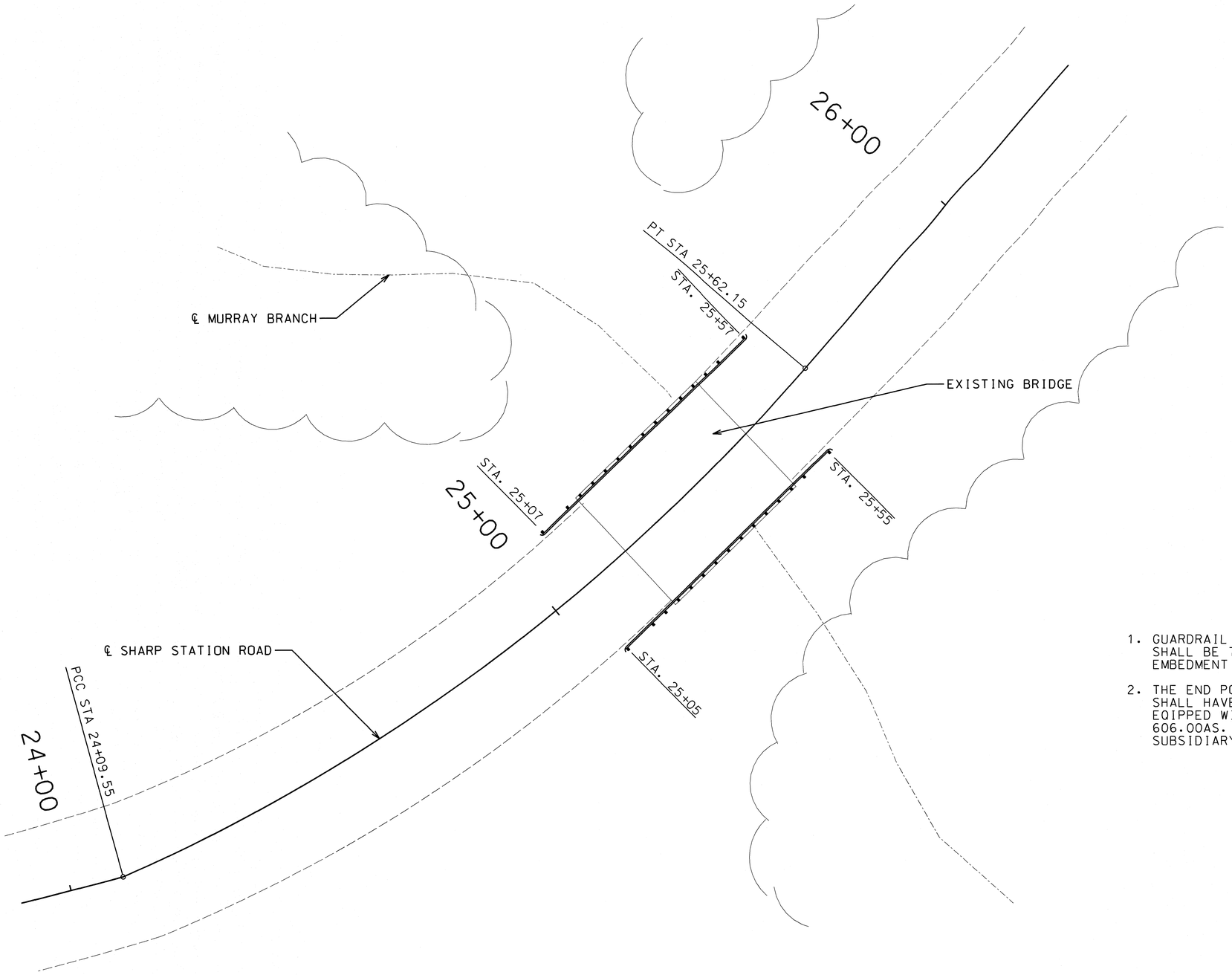
SHEET NO.	TOTAL SHEETS
23	30

ELM GROVE ROADWAY IMPROVEMENTS

PLATTE COUNTY

DATE 6/27/07

GBA GEORGE BUTLER ASSOCIATES, INC.
Engineers Architects



1. GUARDRAIL POSTS NOT ATTACHED TO THE CULVERT SHALL BE 7' WOOD POSTS AND HAVE A MINIMUM EMBEDMENT LENGTH OF 42".
2. THE END POSTS OF EACH OF THE GUARDRAIL SECTIONS SHALL HAVE A SPACING OF 6'3" AND SHALL BE EQIPPED WITH AN END ANCHOR PER MODOT STANDARD 606.00AS. NO DIRECT PAYMENT FOR END ANCHORS, SUBSIDIARY TO GUARDRAIL (THRIE BEAM).

SCALE IN FEET

0 10 20 30

MURRAY BRANCH CULVERT GUARDRAIL ATTACHMENT DETAIL SHEET 1 OF 3

MoDOT 2008 Practical Design Awards for Excellence

Murray Branch Rail

Jowler Creek Truss Bridge

Before

Off-System Project
Platte County, MO

Typical Roadway

GBA GEORGE BUTLER ASSOCIATES, INC.

MoDOT 2008 Practical Design Awards for Excellence

Jowler Creek Substructure Construction

During

Off-System Project
Platte County, MO

GBA GEORGE BUTLER ASSOCIATES, INC.

MoDOT 2008 Practical Design Awards for Excellence

Murray Branch Guardrail Improvements

New Jowler Creek Bridge

New Roadway

After

Off-System Project
Platte County, MO

GBA GEORGE BUTLER ASSOCIATES, INC.

OFF SYSTEM PROJECTS
2008 APPLICATION FORM
(required for each entry)

Federal Project No. _____

Local Public Agency Platte County **Route** Elm Grove and Sharp Station Roads

Description (brief description of primary scope of project) Upgrade over 7 miles of gravel road, replace two bridge structures

Is the submittal for the entire project or just a portion of the project? Please explain: Entire project

Project Contact for:

Local Public Agency Greg Sager – Platte County Public Works Director

Consultant (if applicable) Cory Clark – Project Manager

MoDOT (if applicable) John Fontana

Other Key personnel (may include consultants) (limit of 9)

Brian Scovill, Platte County | Jim Jarrett, GBA | _____

_____ | Bryan Blizzard, GBA | _____

_____ | Jon Karst, GBA | _____

Project Budget:

Preliminary Estimate $ 3.7 million **Award amount** $ 1.93 million

Value Engineering study during design? yes ☐ no X (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? (In layman's terms - 100 words or fewer) Practicality on multiple levels. We went from $5M for roadway and bridge upgrades meeting AASHTO Standards to a $1.93M project meeting County and public interests. The "Cadillac" solution blew the County's $2M budget. Public interest was eliminating dust and a new Jowler Creek Bridge. Cost cut to $3.7M by using County forces for some work, minimizing grading, and reducing design storms. Replacing critical drainage structures and chip sealing saved $1.5M. MoDOT approval of the 100-year Platte River backwater and the 25-year Jowler flow saved the bridge 86' and $300,000. A 24' roadway and 3-girder bridge saved $18,000.

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.