

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. J6S1597 Route 100 County / LPA Franklin

Description (attach separate sheet if necessary) _____

Replace bridge over Little Boeuf Creek in Franklin County, just west of Washington, MO..

see attached sheet

Complete this section for: **Process Improvement**

Process or Product Provide a temporary low-water crossing during construction

Description (attach separate sheet if necessary) _____

District 6 utilized spare bridge components from Districts 5 and 10 to provide a two-way temporary low water crossing bypass structure during construction.

Project Leader Tim Schroeder

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

<u>Tim Hellebusch</u>	<u>Wayne Elliott</u>	<u>Jim Smith</u>
<u>Judy Wagner</u>	<u>Justin Wolf</u>	<u>J.D. Kelley</u>
<u>Greg Sanders</u>	<u>Jenn Becker</u>	<u>Larry Rohr</u>

Project Budget:

Initial Cost / Estimate \$ _____ Final Cost / Award \$ _____

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) _____

see attached sheet

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

Practical Design 2008 Awards for Excellence Competition



Route 100
Franklin County
J6S1597

Presented by: District 6

Description:

The existing Route 100 bridge at Little Boeuf Creek was built in 1934, is 24 ft wide, and has no shoulders. The current ADT of Route 100 is 9,600 vehicles/day. The 20 year design ADT is 15,742 vehicles/day. There are 10.5 percent trucks.

Our original design would have constructed a new bridge that was raised six to eight feet higher than existing to minimize flooding in the future, per MoDOT bridge division's practice at the time. The new structure would have been 44 ft wide – two 12 ft lanes with 10 ft outside shoulders. The 10 ft shoulders were to be constructed at full depth, because the traffic control plan was to build the northern half of the bridge first, and utilize the new driving lane and shoulder to facilitate two-way traffic on the bypass. Then, the existing bridge would be demolished and the second half of the new structure would be built in its place. Because of the elevation change and the realignment of Route 100, we proposed a 0.3 mile long project to realign Route 100 to the proposed new structure.

With the advent of practical design, the core team took another look at the scope. We determined that the existing bridge experienced backwater flooding from the Missouri River; but, the road never went underwater. Therefore, we decided that we could afford to replace the existing bridge in place, and at the same vertical elevation.

We pursued the idea of closing Route 100 and setting up a local Route KK/185 detour. The detour was seven miles long. It was also very narrow and had rolling terrain. We held a public meeting on 2/22/07 to present this idea, and the public strongly rejected the detour, saying that the detour route wasn't safe for truck traffic. We agreed, and withdrew our plans to close the road.

Our current scope is to replace the existing structure in place with a prestressed concrete I girder bridge. The new structure is 32 ft wide, and features modest 4 ft shoulders to match future improvements to the corridor. By utilizing the existing alignment and profile of the roadway, we were able to virtually eliminate any reconstruction of the roadway on both approaches to the bridge. To facilitate two-way traffic during construction, we will construct a temporary crossing immediately to the north of the existing bridge, using spare bridge parts from District 10.

Total construction costs went from \$1,863,000 (04-08 STIP) to a project award of \$910,000. The project was constructed in the spring and summer of 2008. It was completed ahead of schedule and significantly under budget. During construction, the project office consulted with the bridge division, and determined that the 14 inch pile for the temporary bridge could be reduced to 10 inch pile.

04-08 STIP Construction Budget:	\$1,863,000
Project Award:	\$ 910,000
Final Cost:	<u>\$ 880,000</u>
Total Savings:	\$ 983,000 (52.7 percent savings)

What would make this entry stand out from the rest of the entries when considering MoDOT's practical design philosophy?

Scope Comparison: When you examine the scope before and after practical design, you'll see that the design elevation of the bridge was lowered from its calculated "standard" elevation due to public input that the road didn't experience flooding problems. We were able to keep the present horizontal and vertical alignment of the roadway, which virtually eliminated the need to reconstruct 0.3 mile of the roadway. We utilized spare bridge parts from District 10 to construct a temporary crossing to address traffic control staging during reconstruction.

Purpose and Need: The purpose and need of this project was to replace the existing bridge on Route 100 over Little Boeuf Creek. In the historic flooding of the 1990's, flood backwater from the Missouri River lapped at the bridge girders, but never overtopped the roadway. Therefore, there was no justification for raising the vertical alignment of the replacement structure as originally proposed. Although the "original" design called for 10 ft shoulders, we reduced the shoulders to 4 ft to be consistent with what's along the immediate corridor.

Roadway User Expectations: The public was very outspoken in their opposition to any kind of detour during construction. Our proposed local route detour over Routes KK and 185 was soundly rejected. The public said that the detour was too narrow, hilly, and curvy for the truck traffic that would be forced onto it. Public input suggested that floodwater would come close to the road, but never overtopped it.

New techniques and non-traditional design: MoDOT Bridge Division suggested the use of spare bridge parts from District 10 to create a temporary water crossing during construction. This concept is rarely used in the St. Louis Metro District. The low water crossing solved the problem of traffic control during construction and greatly pleased the public.

Cost Savings: The total construction costs went from \$1,863,000 (04-08 STIP) to a project award of \$910,000. As of change order number 3, the project is \$7,500 under budget, and the project will end up at approximately \$30,000 under budget when the final change order is written.

04-08 STIP Construction Budget:	\$1,863,000
Project Award:	\$ 910,000
Final Cost:	<u>\$ 880,000</u>
Total Savings:	\$ 983,000 (52.7 percent savings)

MoDOT Values: This project exemplifies the following MoDOT values:

- MoDOT will **be flexible** because we believe one size does not fit all.
- MoDOT will **be responsive and courteous** because we believe in delighting our customers.
- MoDOT will **provide the best value for every dollar** spent because we're taxpayers too.
- MoDOT will **listen and seek to understand** because we value their dignity.
- MoDOT will **seek out and welcome any idea that increases our options** because we don't have all the answers.
- MoDOT will **always strive to do our job better, faster, and cheaper** because we want to meet more of Missouri's needs.

Route 100 at Little Boeuf Creek: Before and After



Before



After

Route 100 at Little Boeuf Creek: Before and After



Before



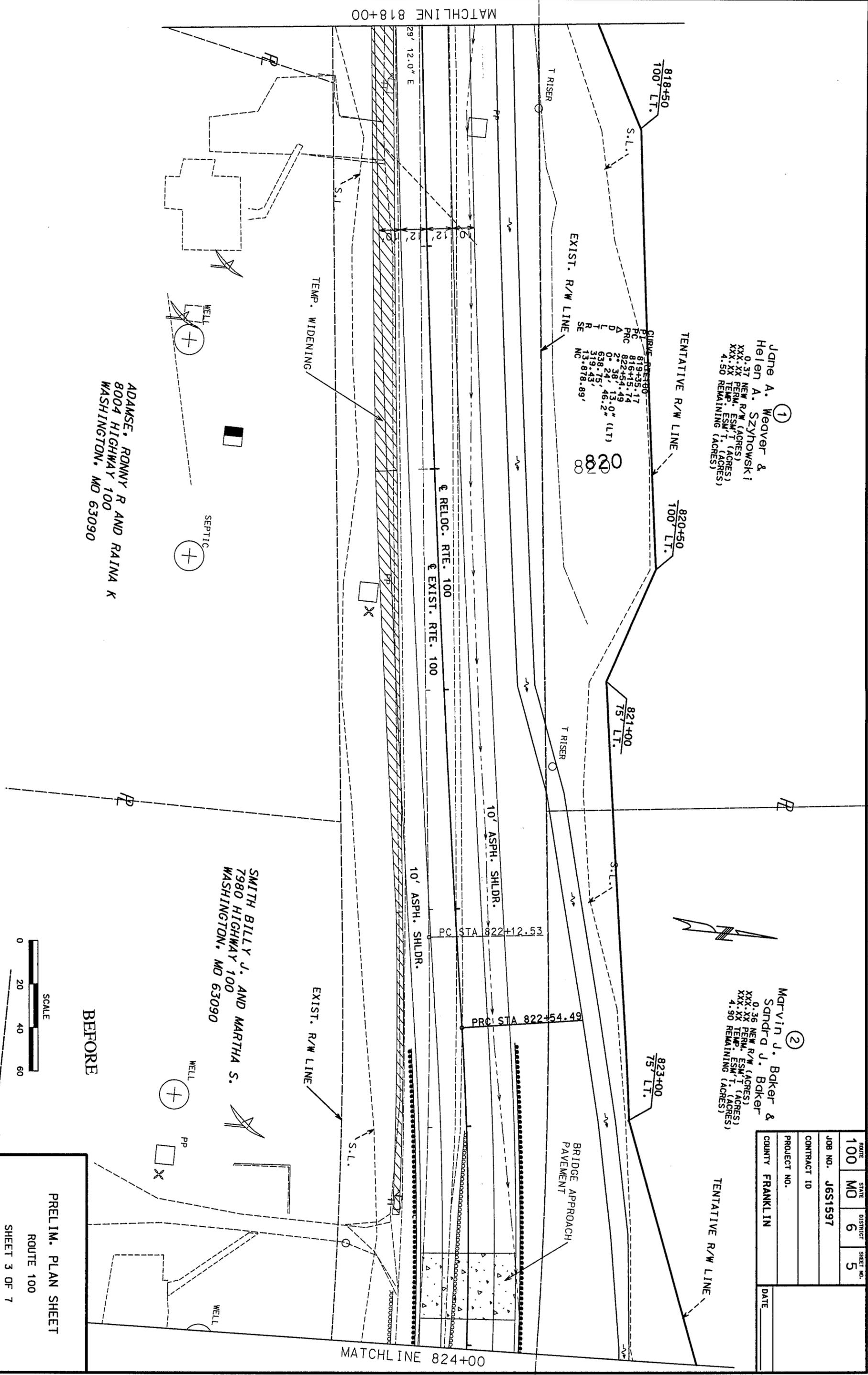
After

ROUTE	STATE	DISTRICT	SHEET NO.
100	MD	6	5
JOB NO. J6S1597			
CONTRACT ID			
PROJECT NO.			
COUNTY	DATE		
FRANKLIN			

①
 Jane A. Weaver &
 Helen A. Szyhowski
 0.37 NEW R/W (ACRES)
 XXX.XX PERM. ESM/T. (ACRES)
 XXX.XX TEMP. ESM/T. (ACRES)
 4.50 REMAINING (ACRES)

②
 Marvin J. Baker &
 Sandra J. Baker
 0.36 NEW R/W (ACRES)
 XXX.XX PERM. ESM/T. (ACRES)
 XXX.XX TEMP. ESM/T. (ACRES)
 4.90 REMAINING (ACRES)

CLIQUE 666190
 PL 819+35.17
 PC 816+15.74
 PRC 822+54.49
 Δ 2-38' 13.0" (LT)
 L 0-24' 46.2"
 T 638.75'
 R 319.43'
 SE 13.878.89'

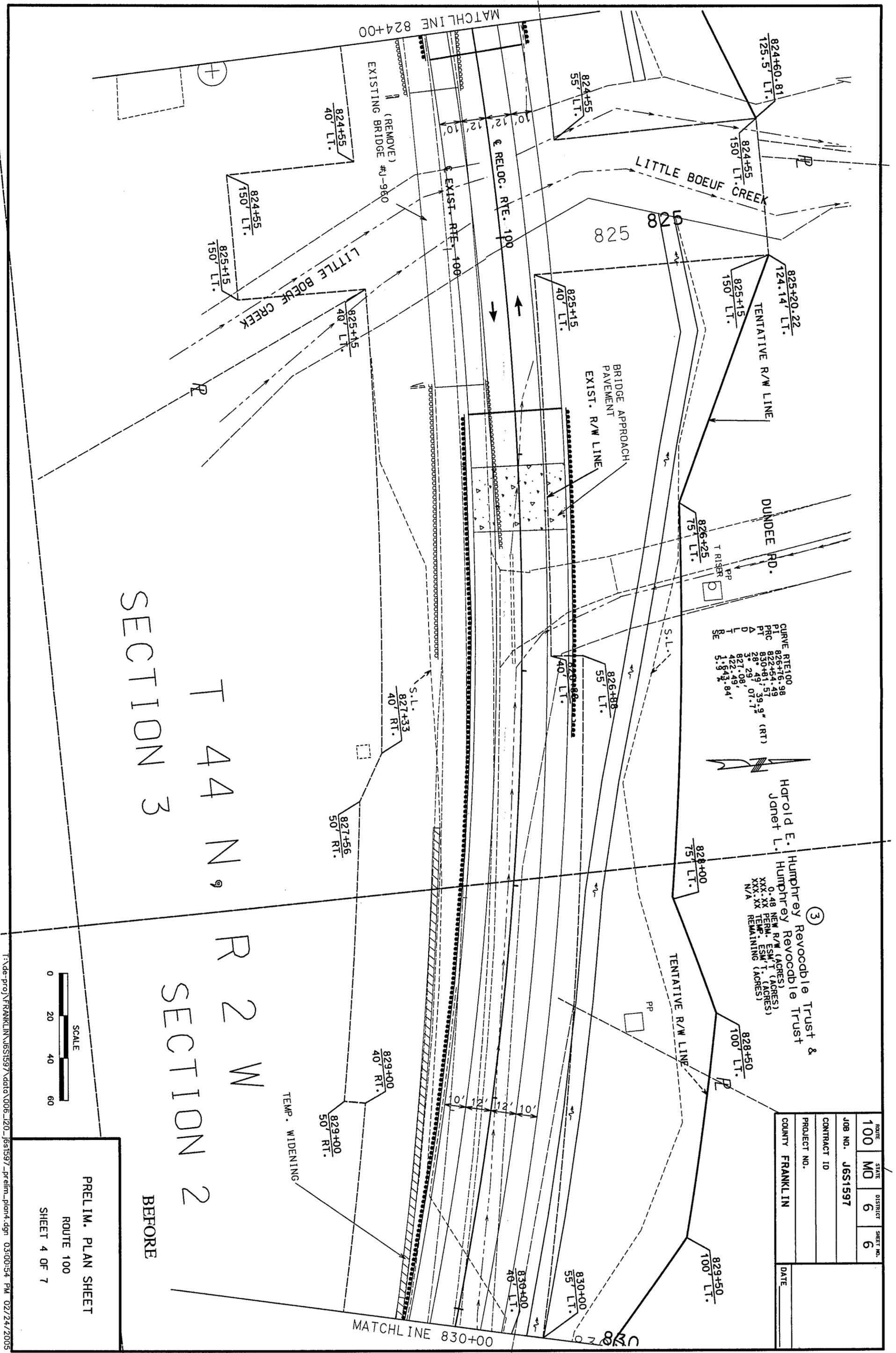


ADAMSE, RONNY R AND RAJNA K
 8004 HIGHWAY 100
 WASHINGTON, MD 63090

SMITH BILLY J. AND MARTHA S.
 7980 HIGHWAY 100
 WASHINGTON, MD 63090

BEFORE

PRELIM. PLAN SHEET
 ROUTE 100
 SHEET 3 OF 7



SECTION 3
T 44 N
R 2 W
SECTION 2
BEFORE

CURVE R1E100

PI	826+76.98
PT	827+54.49
PC	830+91.57
PT	28+29' 07.7"
Δ	3° 29' 07.7"
L	827+08'
T	422+99'
R	1,843.84'
SE	3.94%

Harold E. Humphrey Revocable Trust & Janet L. Humphrey Revocable Trust
 0.48 NEW R/W (ACRES)
 XXX.XX PERM. ESM. T. (ACRES)
 XXX.XX TEMP. ESM. T. (ACRES)
 N/A REMAINING (ACRES)

ROUTE	STATE	DISTRICT	SHEET NO.
100	MO	6	6
JOB NO. J6S1597			
CONTRACT ID			
PROJECT NO.			
COUNTY FRANKLIN			
DATE			

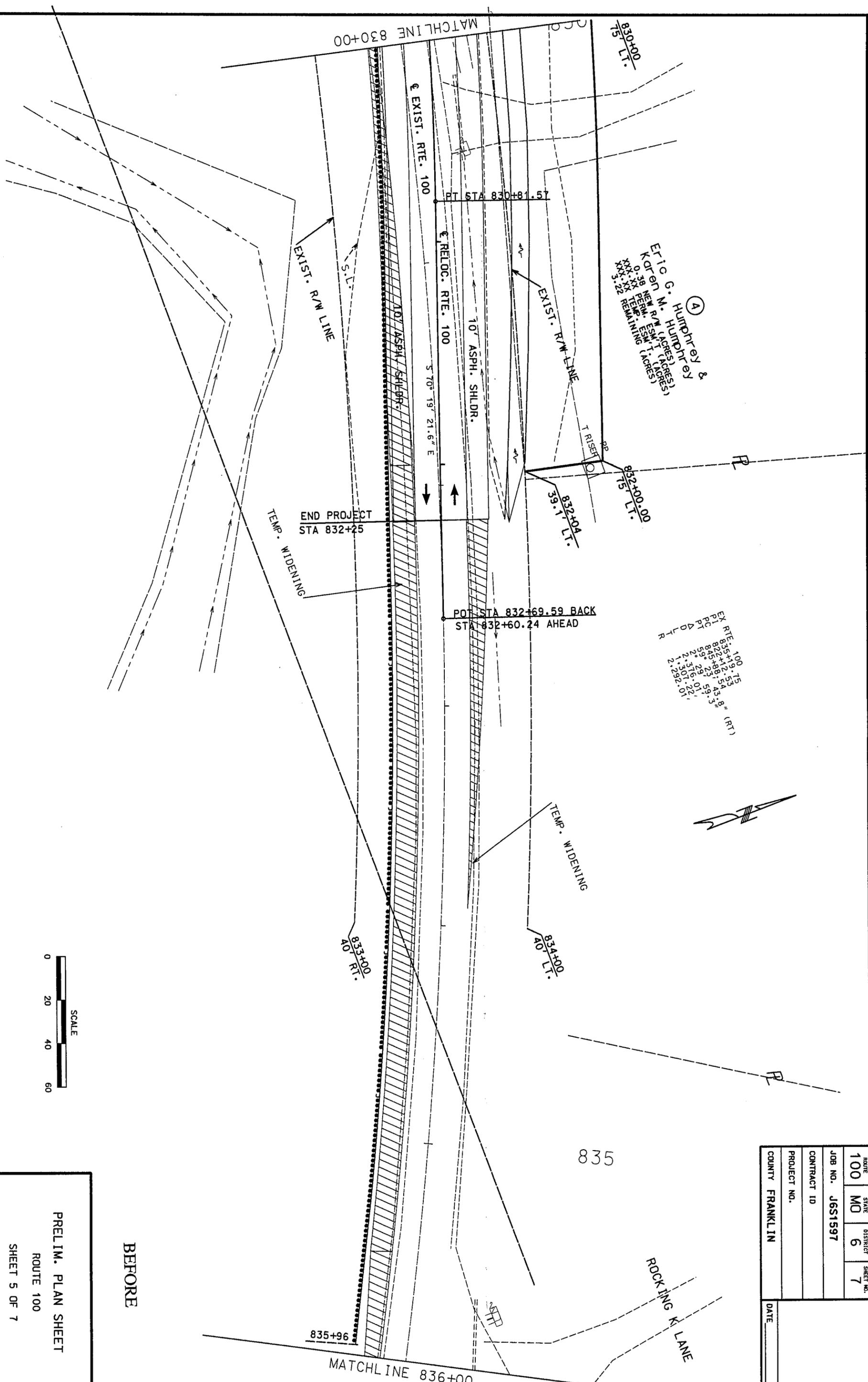


PRELIM. PLAN SHEET
 ROUTE 100
 SHEET 4 OF 7

ROUTE	STATE	DISTRICT	SHEET NO.
100	MO	6	7
JOB NO. J6S1597			
CONTRACT ID			
PROJECT NO.			
COUNTY	FRANKLIN		
DATE			

④
 E.T.I.C. G. Humphrey &
 K. D. U. N. M. Humphrey &
 ORDER U. N. M. Humphrey &
 0.48 PERM. ESM (T. PRESS)
 XXX-XX REMAINING (AD)
 5.22

EX. RTE. 100 15
 RT 825+5.53
 PC 825+89.54
 PT 89.27 59.35
 ΔDL-R 2.316.22,
 2.292.01



BEFORE

PRELIM. PLAN SHEET
 ROUTE 100
 SHEET 5 OF 7

UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEY AND RECORDS. THE COMMISSION DOES NOT WARRANT THE LOCATIONS OF THESE FACILITIES AS PRECISE. IT IS POSSIBLE THERE MAY BE OTHERS. THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXISTENCE AND PRECISE LOCATION OF ALL FACILITIES AND TO AVOID DAMAGE. SEE THE JOB SPECIAL PROVISIONS FOR A LIST OF UTILITY COMPANIES ON OR WITHIN THE VICINITY OF THE PROJECT LIMITS.

ALL BEARINGS BASED ON STATE PLANE COORDINATES. RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM 87+30 TO 832+00. A DISTANCE OF 0.28 MILES.

①
 John A. Wedover & Helen A. Szyhowski
 0.37 NEW R/W (ACRES)
 0.00 PERM. ESM/T. (ACRES)
 0.00 TEMP. ESM/T. (ACRES)
 4.50 REMAINING (ACRES)
 LOT 34R - CENTURY ESTATES
 2693 Scenic Point Drive

CURVE TC3-1
 PI 0+82.34
 PRC 1+00.00
 PT 1+59.39
 Δ 15.37
 D 93.32'
 R 600.00'

②
 Marvin J. Baker & Sandra J. Baker
 0.36 NEW R/W (ACRES)
 0.00 PERM. ESM/T. (ACRES)
 0.00 TEMP. ESM/T. (ACRES)
 4.90 REMAINING (ACRES)
 LOT 36 - CENTURY ESTATES
 2677 Scenic Point Drive

CURVE TC3-2
 PI 2+80.78
 PRC 3+49.50
 PT 3+49.50
 Δ 22.05
 D 92.32'
 R 600.00'

CURVE TC3-3
 PI 8+90.55
 PRC 10+31.24
 PT 10+31.24
 Δ 27.24
 D 93.32'
 R 600.00'

CURVE TC3-4
 PI 10+31.03
 PRC 11+62.28
 PT 11+62.28
 Δ 12.30
 D 93.32'
 R 600.00'

③
 Harold E. Humphrey Revocable Trust & Janet L. Humphrey
 0.48 NEW R/W (ACRES)
 0.00 PERM. ESM/T. (ACRES)
 0.04 TEMP. ESM/T. (ACRES)
 N/A REMAINING (ACRES)

④
 Eric G. Humphrey & Karen M. Humphrey
 0.33 NEW R/W (ACRES)
 0.00 PERM. ESM/T. (ACRES)
 0.05 TEMP. ESM/T. (ACRES)
 3.27 REMAINING (ACRES)
 7945 Highway 100

FOR DETAILS OF TEMP. CROSS. ALIGNMENT, SEE SHEET 7. FOR DETAILS OF ROCK BLANKET AROUND BRIDGE ABUTMENTS, SEE SHEET 8. FOR UTILITY RELOCATIONS, SEE SHEET 9.

BRIDGE NOTE: A-7194T @ 40' PREFAB. SIMPLE SEGMENTED WIDE FLANGE BEAM SPANS (SEE BRIDGE PLANS)

BEGIN TEMP. BRIDGE STA. 4+95.00 @ TEMP. CROSS.

END TEMP. BRIDGE STA. 6+15.00 @ TEMP. CROSS.

TYPE 11 DRWY. LT. 826+68.54 EX. 100
 2" x 53" GR. C PIPE (18") - TEMP.
 18" x 53" GR. C PIPE (18") - PERM.

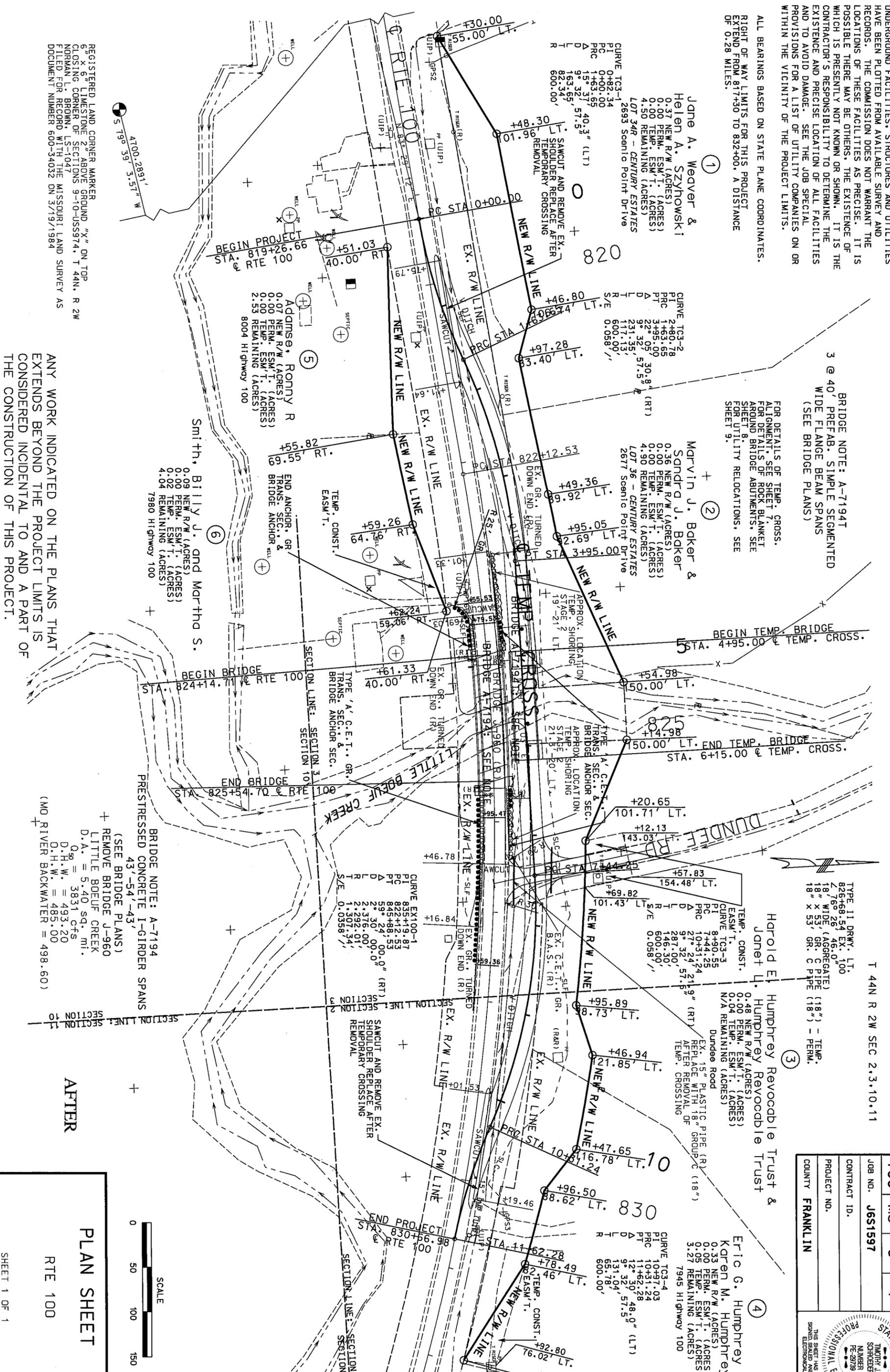
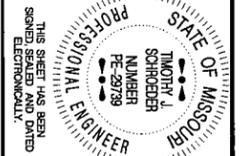
TEMP. CONST. EASM/T. CURVE TC3-3
 PI 8+90.55
 PRC 10+31.24
 PT 10+31.24
 Δ 27.24
 D 93.32'
 R 600.00'

EX. 15" PLASTIC PIPE (R) REPLACE WITH 18" GROUP C (18") AFTER REMOVAL OF TEMP. CROSSING

THIS SHEET HAS BEEN ELECTRONICALLY SEALED AND DATED.

T 44N R 2W SEC 2.3.10.11

ROUTE	STATE	DISTRICT	SHEET NO.
100	MO	6	4
JOB NO.	J651597		
CONTRACT ID.			
PROJECT NO.			
COUNTY	FRANKLIN		



REGISTERED LAND CORNER MARKER
 6" x 6" LIMESTONE 2" ABOVE GROUND "X" ON TOP
 CLOSING CORNER OF SECTIONS 9-10-USS974, T 44N, R 2W
 NORMAN L. BROWN, LS-1047
 FILED FOR RECORD WITH THE MISSOURI LAND SURVEY AS
 DOCUMENT NUMBER 600-34032 ON 3/19/1984

ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

BRIDGE NOTE: A-7194
 PRESTRESSED CONCRETE I-GIRDER SPANS
 43'-54'-43'
 (SEE BRIDGE PLANS)
 + REMOVE BRIDGE J-960
 LITTLE BOEUF CREEK
 D.A. = 5.40 sq. mi.
 0.90 = 3831 cfs
 D.H.W. = 493.20
 O.H.W. = 485.00
 (MO RIVER BACKWATER = 498.60)

PLAN SHEET
 RTE 100

