

Rev 08/18

Bridge No. J0024

Job No. ~~J1S3451~~ JNW0020

Replaces Bridge No. \_\_\_\_\_

# Missouri Department of Transportation

## Bridge Survey Report

Bridge over MARLOW CREEK Route 46  
 County WORTH Sec. 30 & 31 Twp. 66N Rg. 31W ; 2 miles \*\*W of GRANT CITY  
 \*On road from SHERIDAN to GRANT CITY at Sta. 564+43.3  
 West of site East of site  
 \*Give adjacent towns each way, not terminal points of route. \*\* Delete all but one of N-E-S-W or circle appropriate direction.  
 Surveyed by ROBERT PERRY / EAN KLASING Date March 2, 2023

### EXISTING MoDOT BRIDGE AT OR NEAR PROPOSED SITE

(Data provided shall not come from existing bridge plans)

Beginning Station	<u>564+43.3</u>	(ft)	Ending Station	<u>565+70.3</u>	(ft)
Beginning Deck Elevation	<u>C/L=963.6 (overlay)</u>	(ft)	Ending Deck Elevation	<u>C/L=963.5 (overlay)</u>	(ft)
Top of Sound Concrete Curb or Wing near Beginning Station			Top of Sound Concrete Curb or Wing near Ending Station		
Elevation	<u>963.8 +/-</u>	(ft)	Elevation	<u>963.8 +/-</u>	(ft)
Station	<u>564+43.3</u>	(ft)	Station	<u>565+70.3</u>	(ft)
Offset	<u>11.5' LT.</u>	(ft)	Offset	<u>11.5' LT.</u>	(ft)

Does drift collect on structure? N Does the bridge back up water during flood? N  
 Is the bridge overtopped during flood? N Frequency N/A  
 Is the roadway overtopped during flood? Y Frequency Once in 60+ years (1993)

### HIGH WATER ELEVATIONS AT PROPOSED BRIDGE SITE

If high water elevations are not available at proposed bridge site, give elevations where found and note location.

	Extreme High Water (Give date of occurrence)	Ordinary High Water Mark (See EPG 127.4.1.1)
Elevations	<u>963.5 +/-</u>	<u>939.65 +/-</u>
Date(s)	<u>Summer 1993</u>	<u>2-23-23 Observation</u>
Location	<u>East side Bridge</u>	<u>N. Side Bridge</u>
Source of information	<u>Local Oral Testimony</u>	<u>Vegetative Line on Stream Bank</u>
Head (or backwater from )	<u>Head</u>	<u>Head</u>
Frequency (give dates)	<u>N/A</u>	<u>N/A</u>
*** Character of drift	<u>Heavy</u>	<u>Heavy</u>

\*\*\*Light – passes 12 ft opening; Medium – passes 24 ft opening; Heavy – requires over 24 ft opening

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**IMPROVEMENTS WITHIN SURVEY AREA OF PROPOSED BRIDGE  
(WITHIN 1 FOOT ABOVE EXTREME HIGH WATER ELEVATION)**

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Note the location and type of any improvements in the vicinity of the proposed bridge, including residences, businesses, other buildings, crop fields, etc.

Site surrounded by Crops, Woodland and Pasture. A residence is located 800 feet east of bridge on South side of highway

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**OTHER BRIDGES ACROSS SAME STREAM**

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Information required for bridges as indicated on the Bridge Survey Location Request.

Sketches of structure not required. See the Bridge Survey Location Request for additional data needed.

	No. 1	No. 2
Distance along thalweg from proposed structure, upstream or down (ft)		
Railroad, highway or pedestrian bridge. ....		
Extreme High Water Elevation at structure .....		
Does the bridge back up water during floods? .....		

**Additional Remarks:**

Oral testimony on March 2, 2023 from adjoining landowner on South side of Bridge (Dave Gilland, Ph #816-351-5084), stated that in 60+ years, he has never witnessed flood water over the bridge, but in 1993, water overtopped the roadway on the east side of the bridge. He also stated that floodwaters have probably only broken bank levels 10 to 15 times in same 60 years.

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**DATA FOR PROPOSED BRIDGE**

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Are the banks caving/sloughing at the site? Yes

Does the stream appear to be cutting or filling? Cutting

Elevation of extreme low water N/A (ft) During what months is stream dry? Drought's?

Type of surface material of streambed (gravel, sand, silt, etc.) Silt and Sand

Location of dam(s) having a definite spillway within 1 mile of the bridge site? No

If crossing is over drainage ditch, provide the corporate name of drainage district: No

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**Roadway Design Frequency and Required Permits**

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Roadway Design Frequency:	-Year (See EPG 748.2.2)
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Corps of Engineers 404 Permit:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
State Department of Natural Resources 401 Permit:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Environmental Protection Agency NPDES Permit:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

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## PHOTOGRAPHS OF SITE CONDITIONS

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For grade crossings and retaining walls provide photographs documenting site characteristics as deemed necessary.

For stream crossings provide photographs documenting the site characteristics. Photos should be taken in an overlapping manner to provide a 360° panoramic view at or near the proposed stream crossing. Photos should also be taken to show the channel, banks and streambed both upstream and downstream of the proposed bridge, as well as the waterway through the existing bridge. If the existing roadway is overtopped at extreme high water, provide photographs showing the roadway on either side of the existing bridge. If the land use or stream characteristics are significantly different at upstream or downstream valley profiles, provide additional photographs to document these conditions. Additional photographs may also be necessary to provide information on other site-specific conditions. It is especially important to show any nearby improvements that may be affected by flooding or changes in stream velocity. Photos of other bridges near the proposed structure should also be included. These photos should show the bridge profile including details of the superstructure and substructure type. These photos should also show any bank or channel improvements or issues in the area.

### **Brief Description of Photographs (directions and locations):**

#### ***On Bridge Deck Facing East:***



***On Bridge Facing North (Upstream):***



***On Bridge Facing West:***





***On Bridge Facing South (Downstream):***



***Southwest Quadrant Bridge Viewing NE under bridge across Stream:***





***Southwest Quadrant Bridge Viewing East under bridge/across stream:***



***Northeast Quadrant Bridge Viewing SW across stream, under Bridge:***



***Northeast Quadrant Bridge Viewing West across stream:***



***Along East side of Stream, N. of bridge, viewing North (Upstream):***





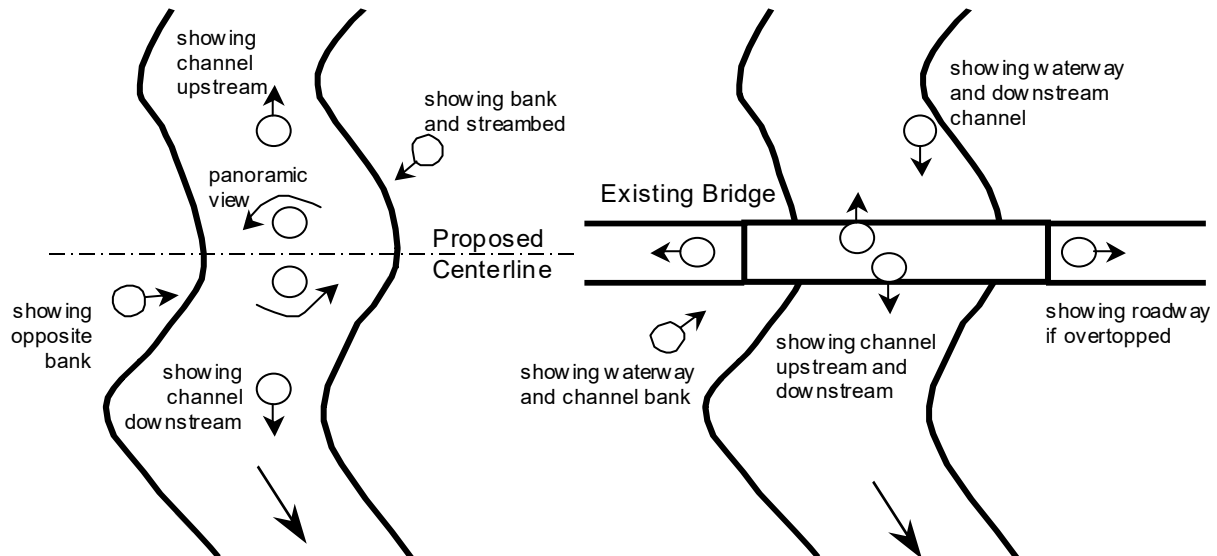
***Along East side of Stream, N. of bridge, viewing South (Downstream):***



***Along East side of Stream, S. of bridge, viewing South (Downstream):***







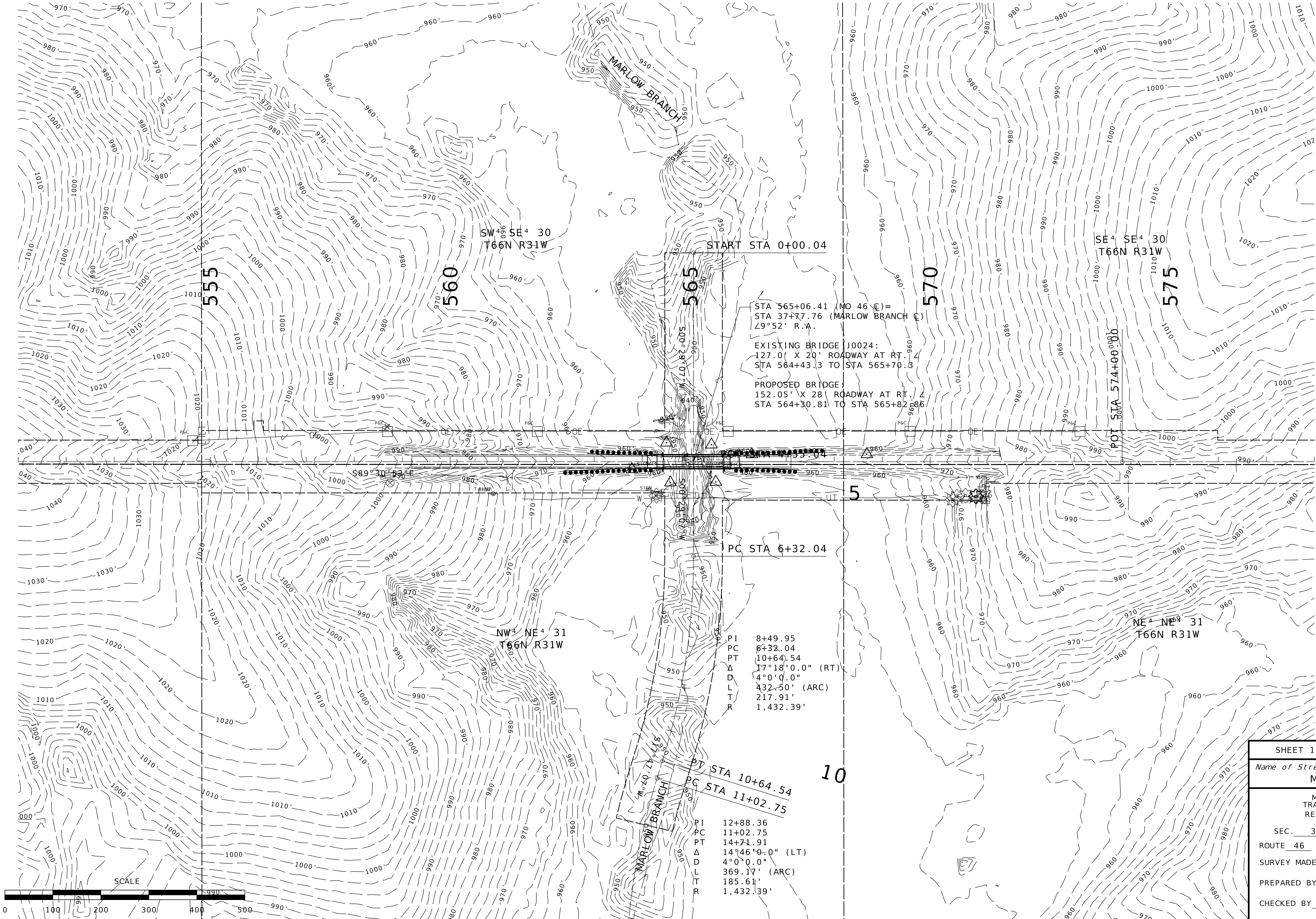
## GENERAL INSTRUCTIONS FOR BRIDGE SURVEYS

**In order to provide the best possible structure design, it is important that this report be completed as fully and accurately as possible.** Consultation with bridge office to resolve questions or issues that require considerable judgment is encouraged.

The purpose of a bridge survey is to provide data needed to establish three important points: the general dimensions of the structure (length, height, skew, and arrangement of spans); the type, size and depth of foundation; and the cost of construction. For stream crossings these three points are very intimately related to the required waterway. A restricted waterway means serious scour, and footings must extend deep or be very substantially founded.

Detailed instructions on completing the Bridge Survey Report and associated plan and profile sheets are contained in EPG 747 Bridge Reports and Layouts of the *Engineering Policy Guide*.

PLAN

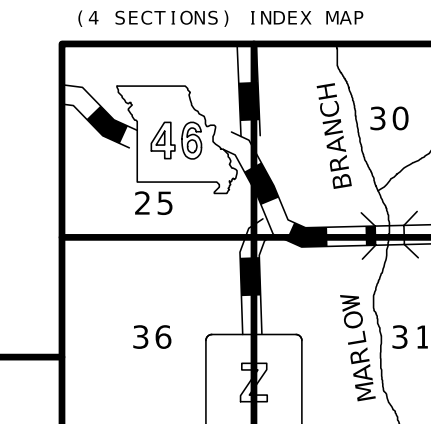
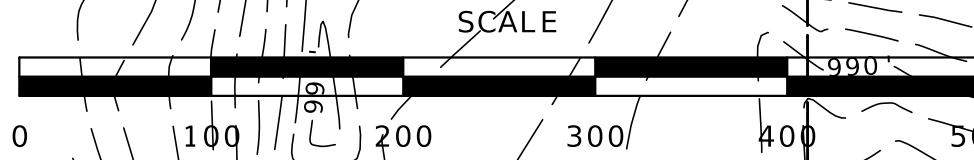


STA 565+06.41 (MO 46 C)=  
STA 37+7.76 (MARLOW BRANCH C)  
29°52' R.A.  
EXISTING BRIDGE 10024:  
127.0' X 20' ROADWAY AT RT. 4  
STA 564+43.3 TO STA 565+70.3  
PROPOSED BRIDGE:  
152.05' X 28' ROADWAY AT RT. 4  
STA 564+30.81 TO STA 565+82.86

PI 8+49.95  
PC 8+32.04  
PT 10+64.54  
Δ 17°18'0.0" (RT)  
D 4°0'0.0"  
L 432.50' (ARC)  
T 217.91'  
R 1,432.39'

PT STA 10+64.54  
PC STA 11+02.75

PI 12+88.36  
PC 11+02.75  
PT 14+71.91  
Δ 14°46'0.0" (LT)  
D 4°0'0.0"  
L 369.17' (ARC)  
T 185.61'  
R 1,432.39'

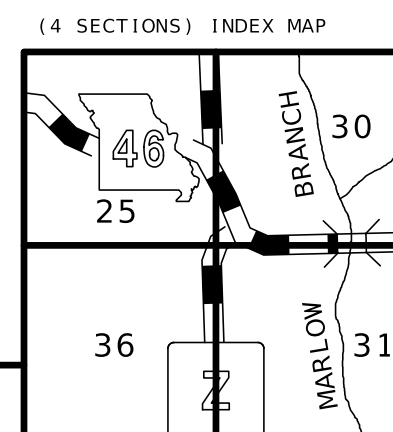
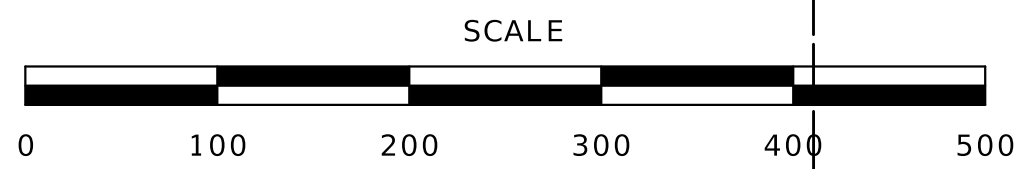
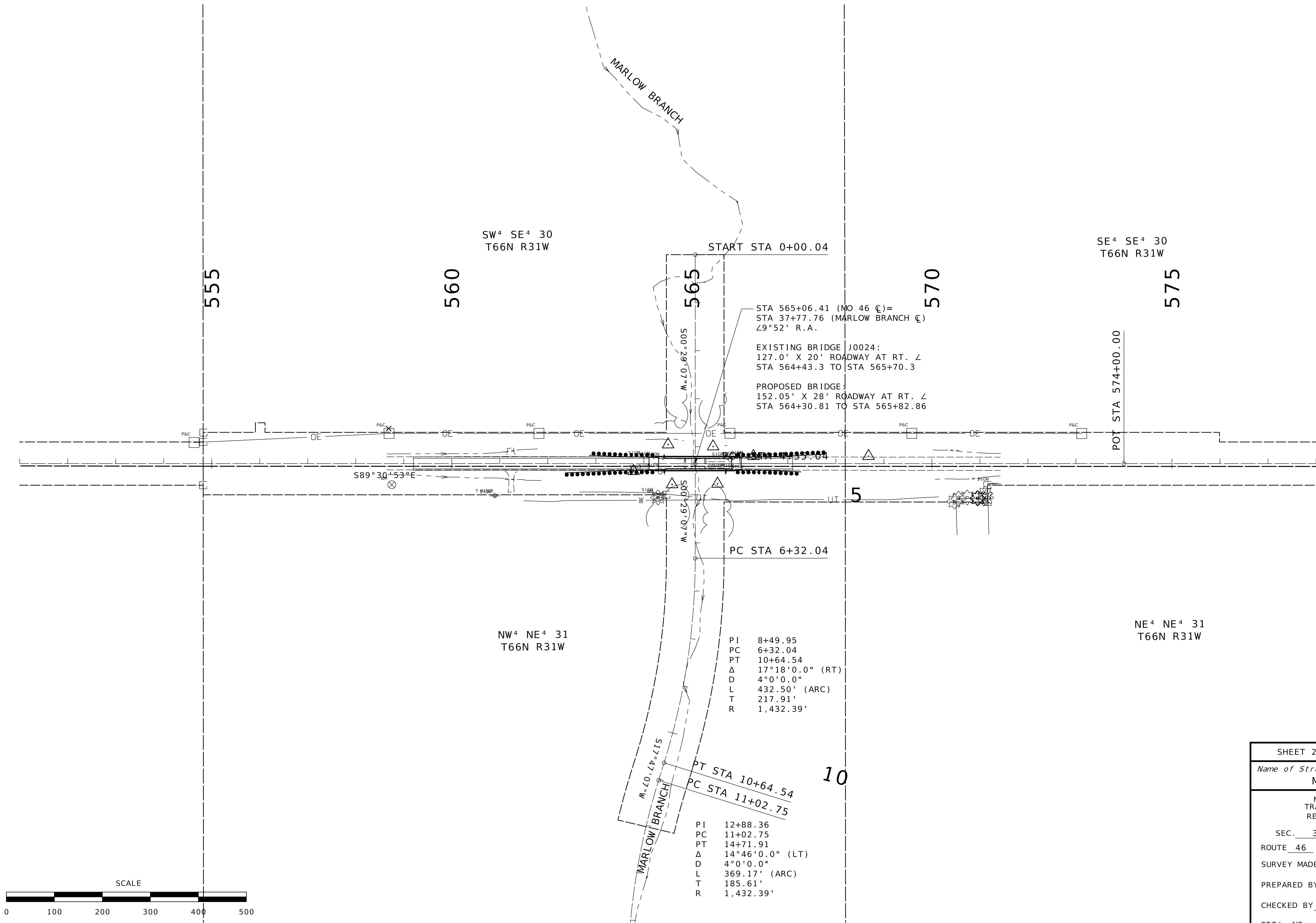


SHEET 1 OF 9	
Name of Stream MARLOW BRANCH	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION REPORT OF BRIDGE SURVEY	
SEC. 30	T. 66N R. 31W
ROUTE 46 ; WORTH COUNTY	
SURVEY MADE BY TREKK DESIGN GROUP	
SPRING 2023	
PREPARED BY JESSICA RAMSEY	
CHECKED BY JOYCE REYNOLDS	
Transportation Project Manager	
PROJ. NO. JNW0020	STA. 565+06.41
JOB NO. BRIDGE NO.	

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



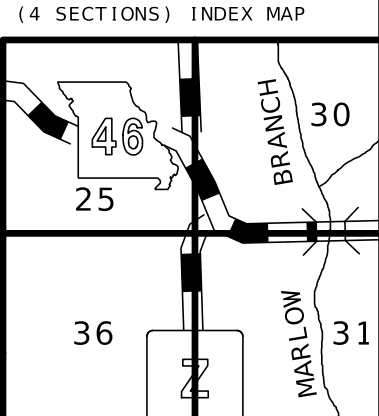
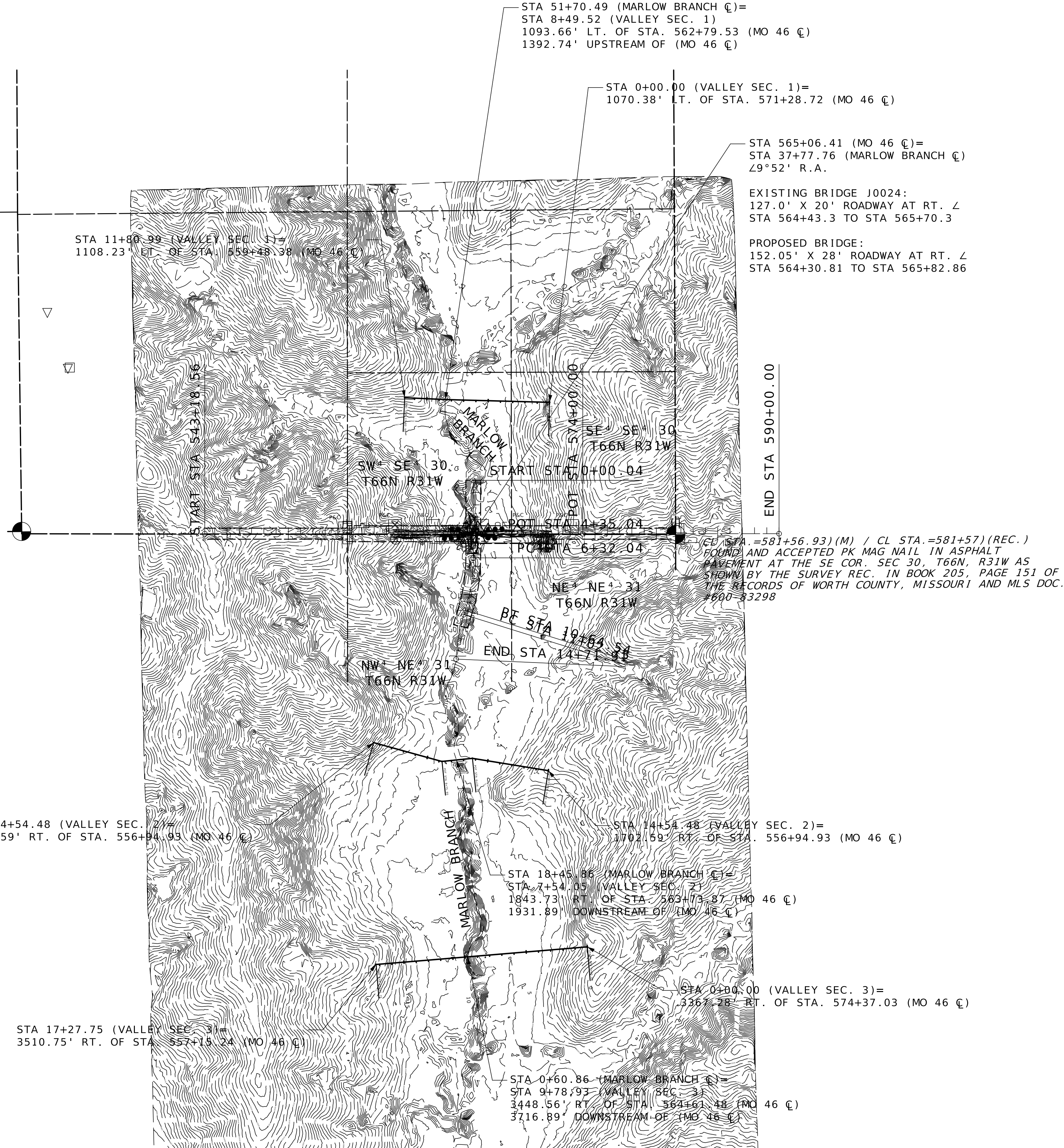
PLAN



SHEET 2 OF 9	
Name of Stream MARLOW BRANCH	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION REPORT OF BRIDGE SURVEY	
SEC. 30 T. 66N R. 31W	
ROUTE 46 ; WORTH COUNTY	
SURVEY MADE BY TREKK DESIGN GROUP SPRING 2023	
PREPARED BY JESSICA RAMSEY	
CHECKED BY JOYCE REYNOLDS Transportation Project Manager	
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JOB NO. JNW0020 BRIDGE NO.	

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## PLAN



SHEET 3 OF 9

MARLOW BRANCH

MISSOURI HIGHWAYS AND

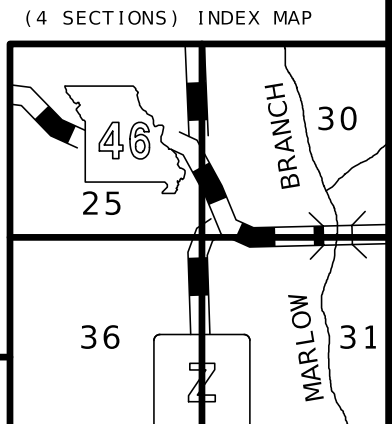
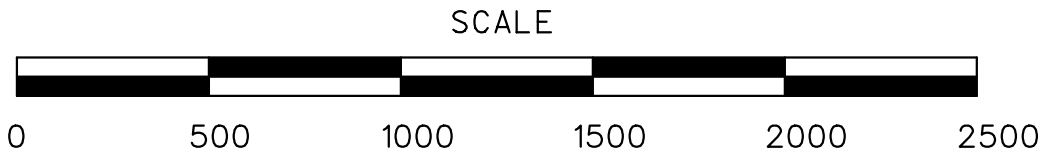
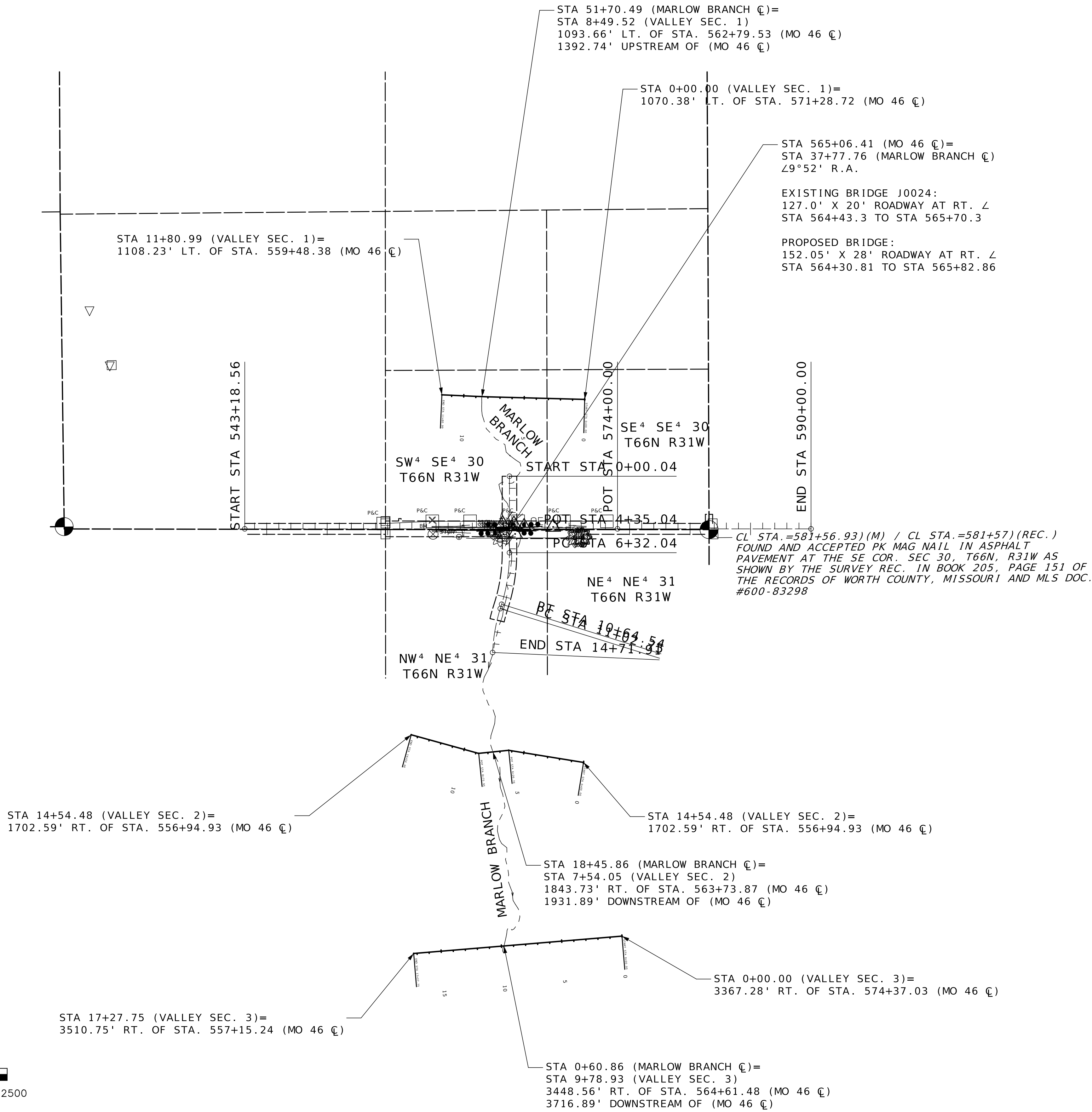
SEC. 30 T. 66N R. 31W  
ROUTE 46 ; WORTH COUNTY  
TREKK DESIGN GROUP  
SURVEY MADE BY SPRING 2023

PREPARED BY JESSICA RAMSEY  
 CHECKED BY JOYCE REYNOLDS  
*Transportation Project Manager*  
 PROJ. NO.                      STA. 565+06.41  
 JOB NO. JNW0020 BRIDGE NO.                     

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PLAN



SHEET 4 OF 9	
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ROUTE 46 ; WORTH COUNTY	
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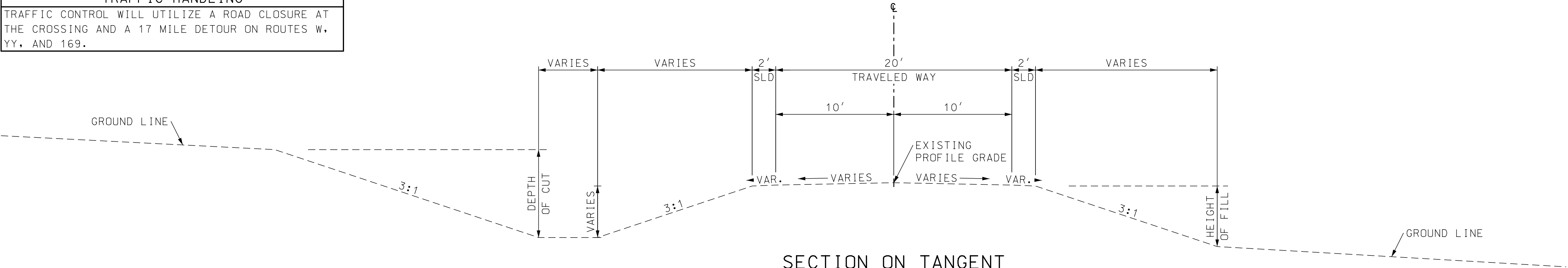
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

TYPICAL SECTIONS

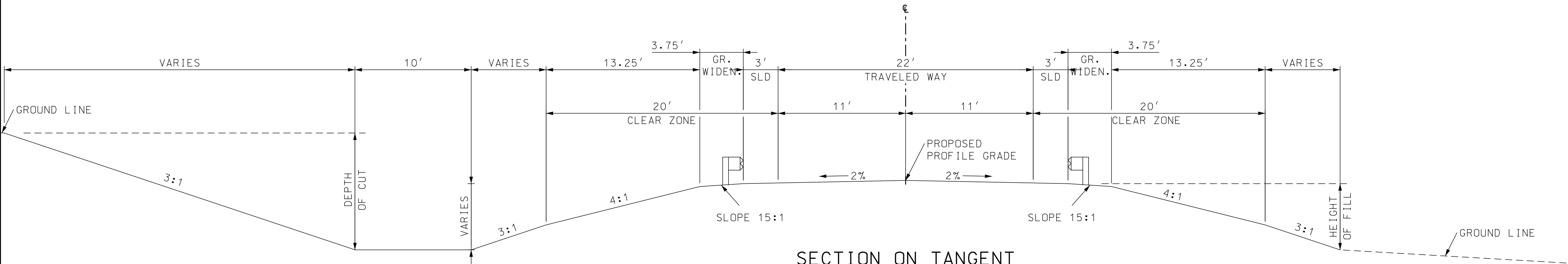
ROUTE 46 TRAFFIC DATA	
AADT	1066
CONSTRUCTION YEAR AADT (2025)	1102
DESIGN YEAR AADT (2045)	1248
DIRECTIONAL DISTRIBUTION (E./W.)	49.5%/50.5%
PEAK HOUR	9.93%
PERCENT TRUCKS	17.55%
GROWTH RATE	0.62%
DESIGN SPEED	55 MPH.
TRAFFIC HANDLING	
TRAFFIC CONTROL WILL UTILIZE A ROAD CLOSURE AT THE CROSSING AND A 17 MILE DETOUR ON ROUTES W, YY, AND 169.	

BENCHMARK (NAVD88)	
BM108	60D NAIL IN S. SIDE OF WALNUT TREE SIDE OF ROUTE 46 71' ± RT. STA. 564+29 ± CL ROUTE W ELEV. 923.90'

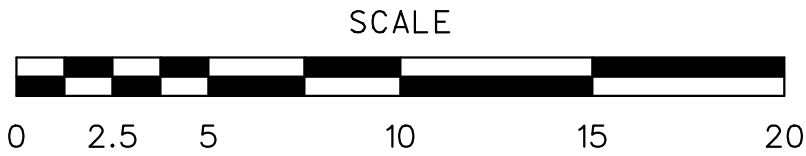
CONTROL POINTS		
CP100	CP101	CP102
E: 2802997.74	E: 2803501.43	E: 2803751.63
N: 1572781.85	N: 1572805.88	N: 1572834.88
ELVEV: 999.33	ELVEV: 963.98	ELVEV: 962.95



SECTION ON TANGENT  
EXISTING TYPICAL SECTION RTE. 46  
STA. 559+20.00 TO 567+10.00



SECTION ON TANGENT  
PROPOSED TYPICAL SECTION RTE. 46  
STA. 559+20.00 TO 567+10.00



MISSOURI COORDINATE SYSTEM, 1983  
WESTERN ZONE  
PROJECTION FACTOR = 1.0000983827  
GRID FACTOR = 0.999901627  
BEARINGS ARE REFERENCED TO NAD83.  
ELEVATIONS ARE REFERENCED TO VERTICAL  
DATUM NAVD88.

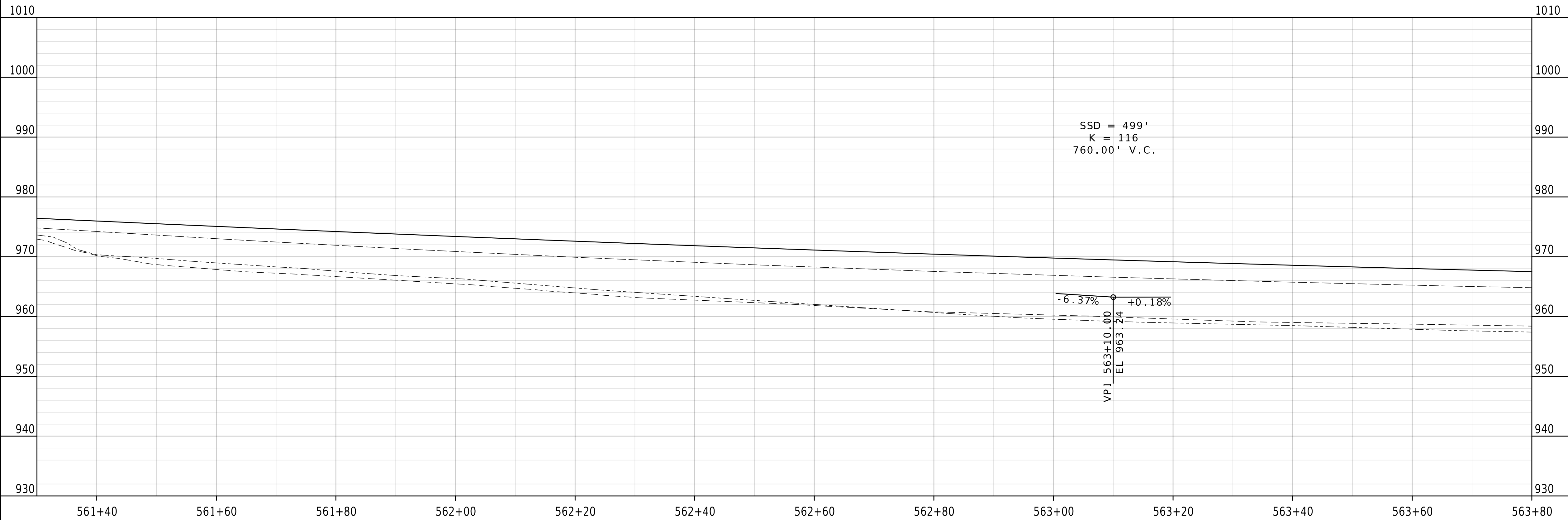
SHEET 5 OF 9

Name of Stream	
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ROUTE 46	WORTH COUNTY
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PROFILE

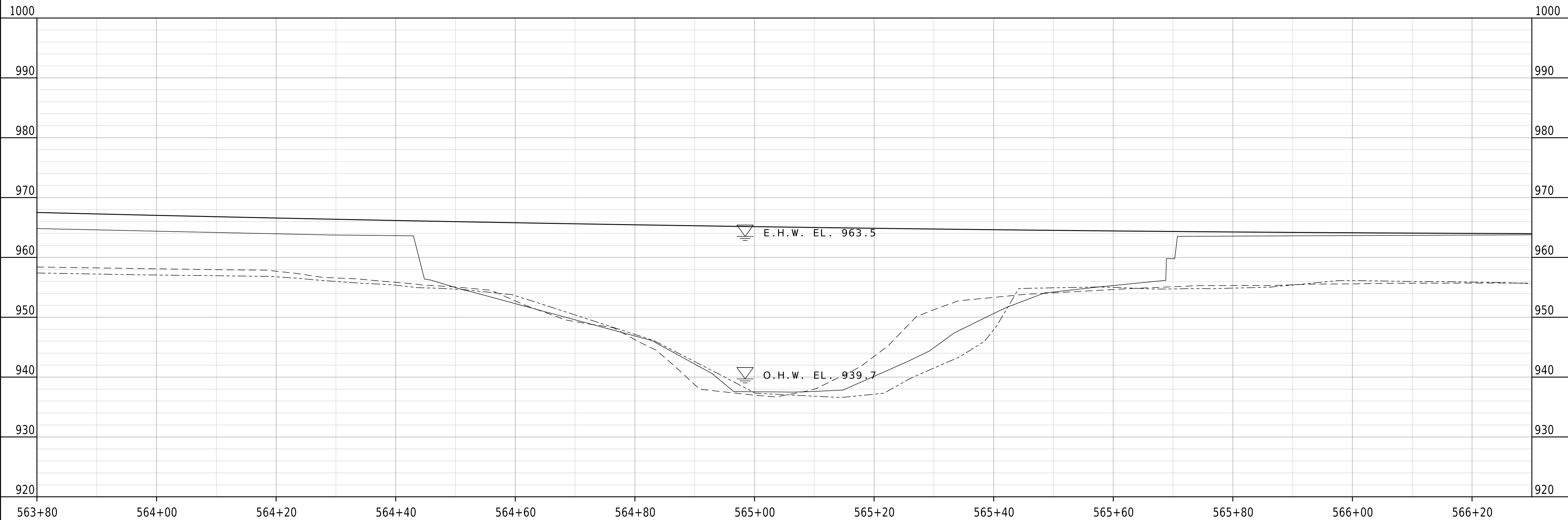


THREE LINE PROFILE

HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'

PROFILE KEY

- PROPOSED PROFILE ROUTE 46
- EXISTING PROFILE ROUTE 46
- UPSTREAM OFFSET PROFILE AT NATURAL GROUND (40')
- DOWNSTREAM OFFSET PROFILE AT NATURAL GROUND (40')



SHEET 6 OF 9

Name of Stream  
MARLOW BRANCH

MISSOURI HIGHWAYS AND  
TRANSPORTATION COMMISSION  
REPORT OF BRIDGE SURVEY

SEC. 30 T. 66N R. 31W  
ROUTE 46 ; WORTH COUNTY  
SURVEY MADE BY TREKK DESIGN GROUP  
SPRING 2023

PREPARED BY JESSICA RAMSEY

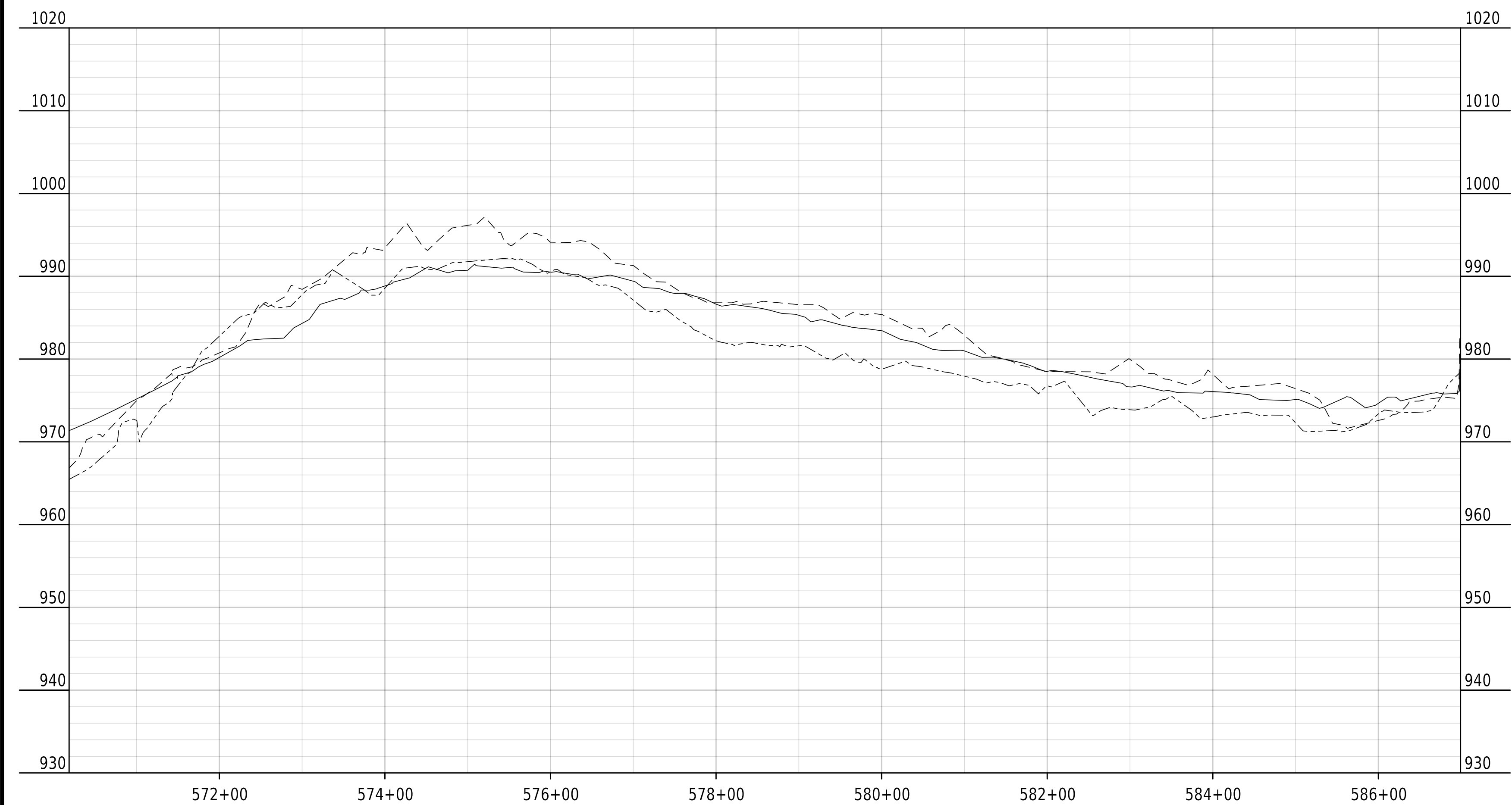
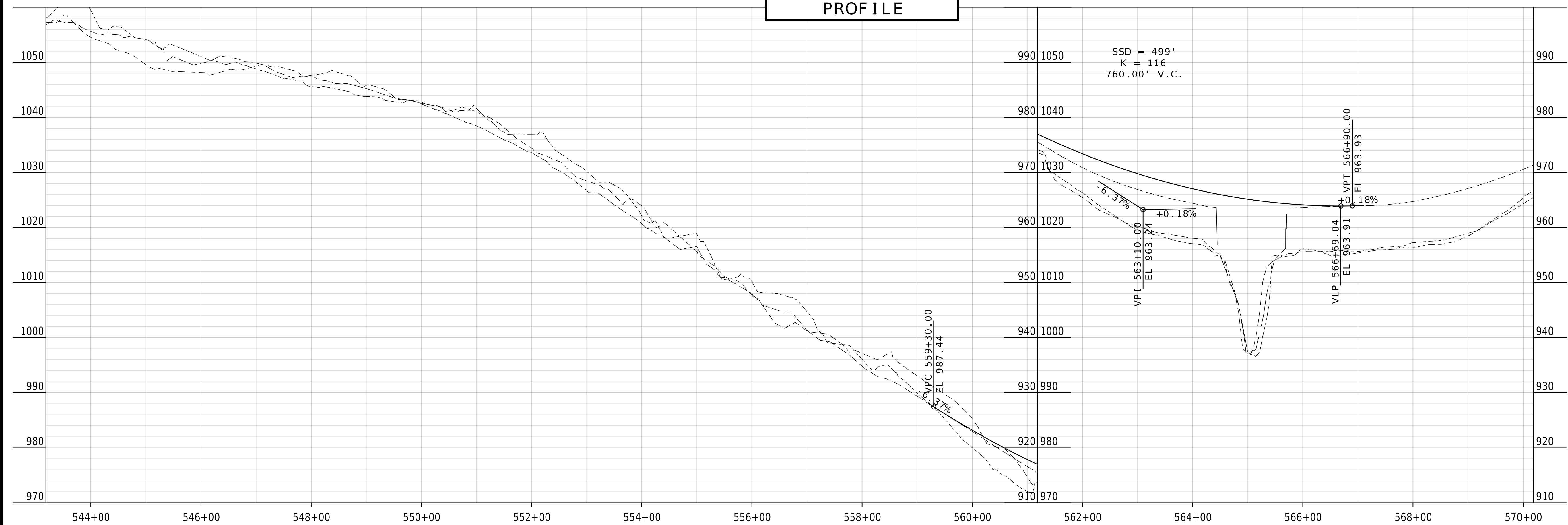
CHECKED BY JOYCE REYNOLDS  
Transportation Project Manager

PROJ. NO. STA. 565+06.41

JOB NO. JNW0020 BRIDGE NO.

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PROFILE



CONTRACTED PROFILE

HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'

PROFILE KEY

- PROPOSED PROFILE ROUTE 46
- EXISTING PROFILE ROUTE 46
- UPSTREAM OFFSET PROFILE AT NATURAL GROUND (40')
- DOWNSTREAM OFFSET PROFILE AT NATURAL GROUND (40')

SHEET 7 OF 9

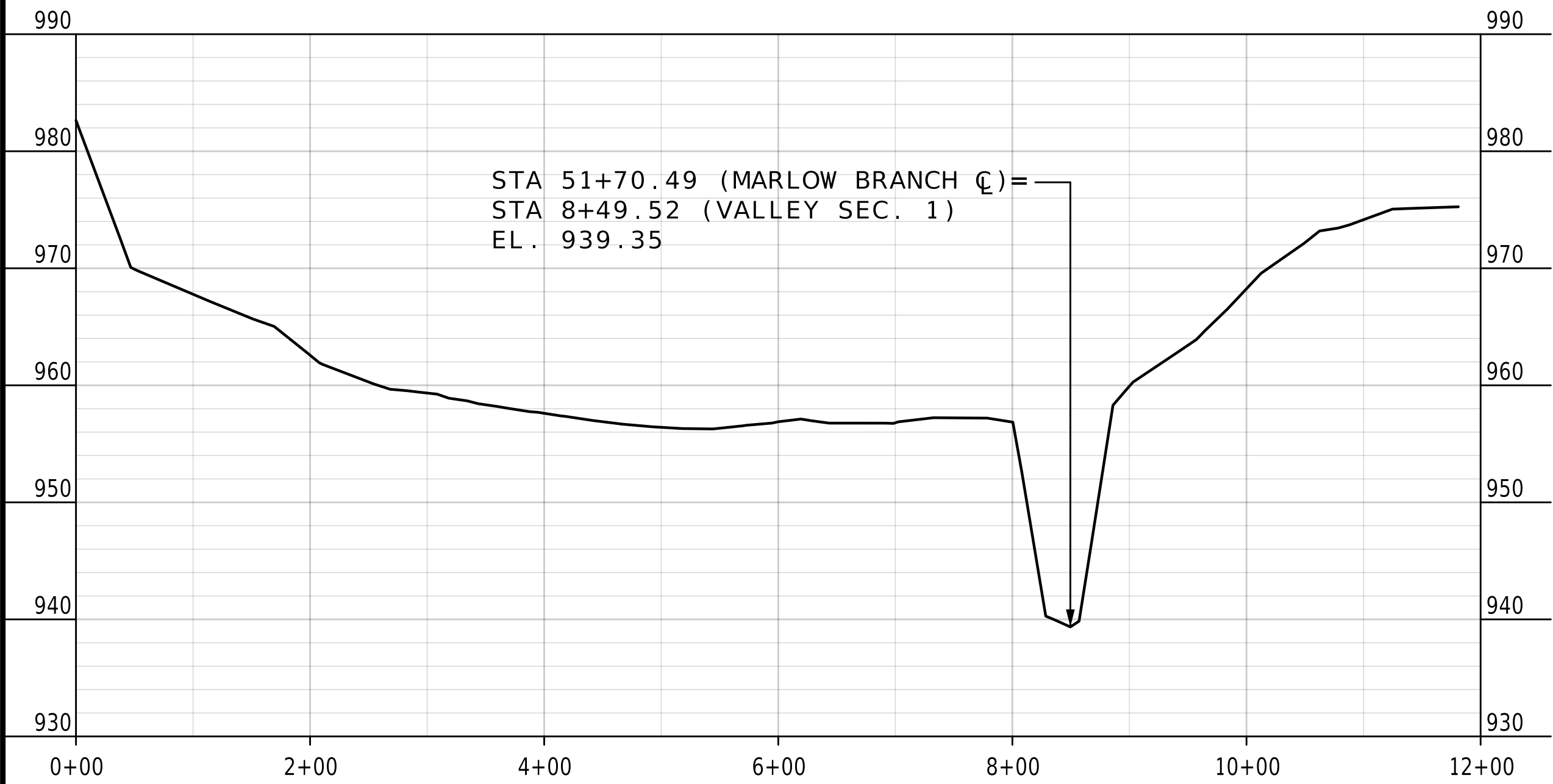
Name of Stream  
MARLOW BRANCH

MISSOURI HIGHWAYS AND  
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REPORT OF BRIDGE SURVEY  
SEC. 30 T. 66N R. 31W  
ROUTE 46 ; WORTH COUNTY  
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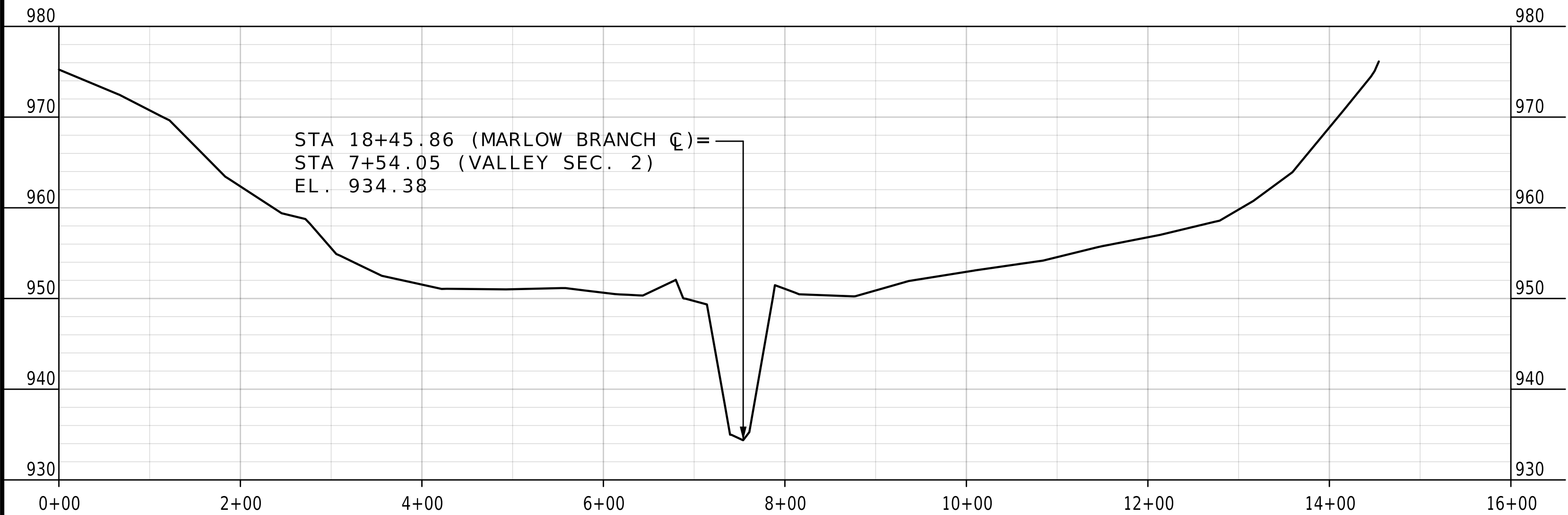


PROFILE



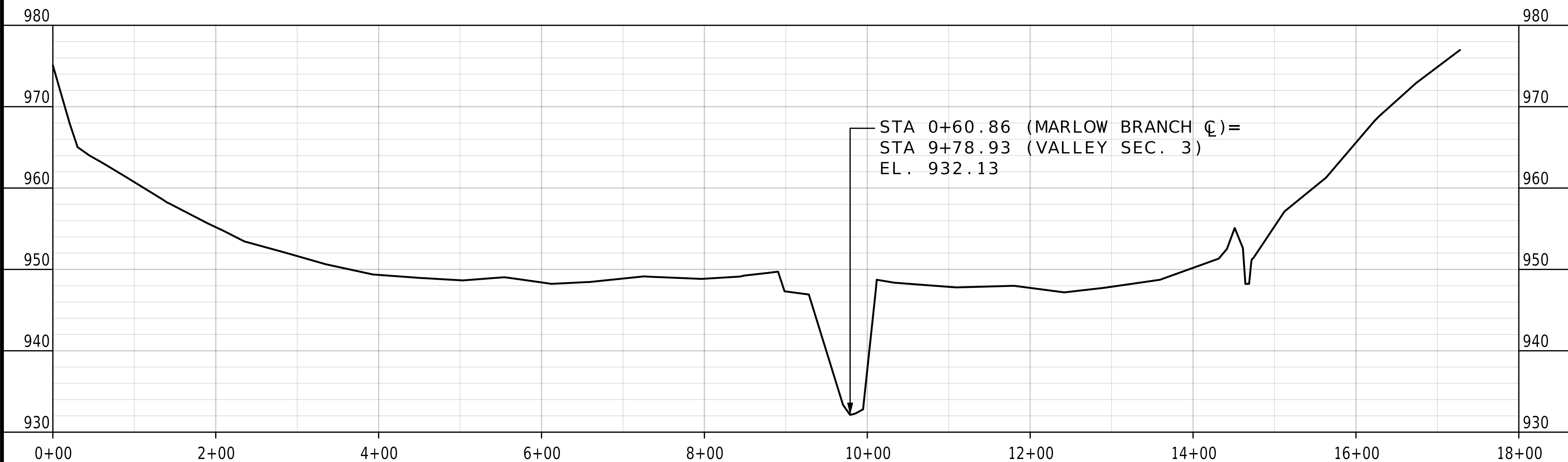
VALLEY SECTION 1  
1392.74' UPSTREAM

HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



VALLEY SECTION 2  
1931.89' DOWNSTREAM

HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



VALLEY SECTION 3  
3716.89' DOWNSTREAM

HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'

SHEET 8 OF 9

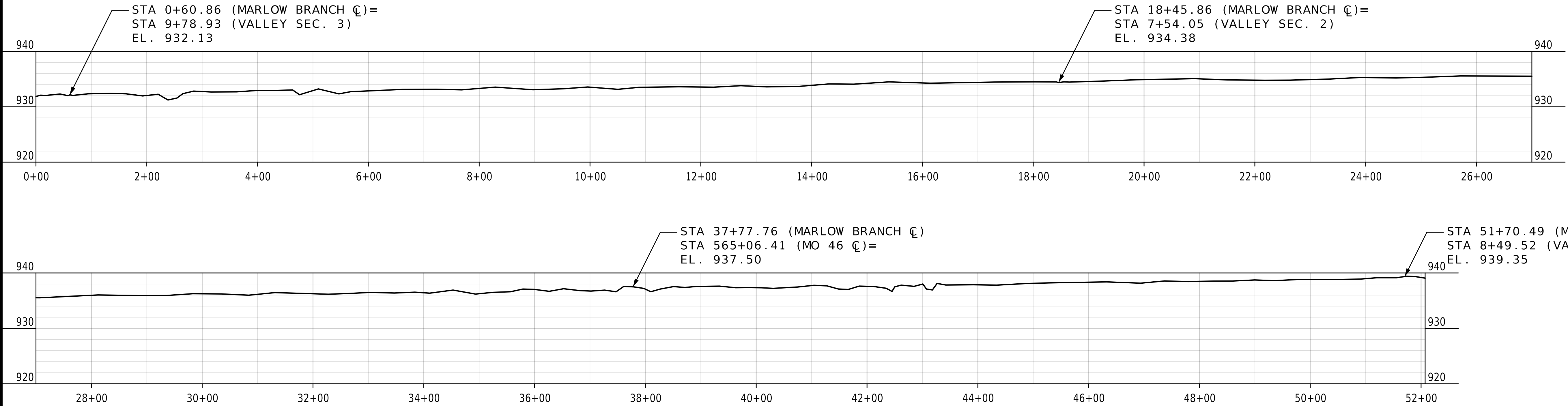
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PROFILE

STREAMBED PROFILE  
MARLOW BRANCH

HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=10'



SHEET 9 OF 9

Name of Stream

MARLOW BRANCH

MISSOURI HIGHWAYS AND  
TRANSPORTATION COMMISSION  
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ROUTE 46 ; WORTH COUNTY

TREKK DESIGN GROUP  
SURVEY MADE BY SPRING 2023

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